TOWARD AN ECOLOGY OF INTELLECTUAL PROPERTY: LESSONS FROM ENVIRONMENTAL ECONOMICS FOR VALUING COPYRIGHT'S COMMONS

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ABSTRACT

The "fair use" defense in copyright law shields an intellectual commons of protected uses of copyrighted material from infringement actions. In determining whether a given use is fair, courts must assess the new use's potential "effect on the market" for the copyrighted work. Fair use jurisprudence too often fails to address the complementary, network, and long-range effects of new technologies on the value of copyrighted works. These effects parallel the indirect, direct, and option values of biodiversity recently recognized by environmental economists. Their sophisticated methods for valuing natural resources in tangible commons can inform legal efforts to address the intellectual commons' "effect on the market" for copyrighted works.

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I. INTRODUCTION: INTELLECTUAL AND TANGIBLE COMMONS

As new technology has enhanced the accessibility of copyrighted materials,[1] Congress and the courts have changed and developed copyright law repeatedly over the past decade. Recent copyright legislation has generally strengthened the hand of owners of intellectual property rights ("IPRs").[2] Court decisions have been more mixed, with some endorsing the expansion of IPRs, and others refusing to recognize their holders' claims.[3]

Responding to these developments, many leading IP scholars have raised concerns about increasing commercialization of the intellectual landscape.[4] While their contributions are diverse, these critical IP scholars[5] have begun to develop the "intellectual" or "creative" commons as a master metaphor for the material they want to protect from perfect control by IPR holders.[6]

A commons is a resource "'in joint use or possession; to be held or

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[1] *See* NICHOLAS NEGROPONTE, BEING DIGITAL (1995); GEORGE GILDER, TELECOSM: HOW INFINITE BANDWIDTH WILL REVOLUTIONIZE OUR WORLD (2000); Charles Mann, *The Heavenly Jukebox*, ATLANTIC MONTHLY, Sept. 2000, *available at* http://www.theatlantic.com/issues/2000/09/mann.htm.

[2] In the 1990's, Congress has passed several pieces of copyright legislation designed to expand the scope and force of copyrightholders' rights, privileges, and immunities. *See, e.g.*,Digital Millennium Copyright Act of 1998 (DMCA), Pub. L. No. 105-304, 112 Stat. 2860 (1998) (adding sections 512 and 1201-05 to the Copyright Act of 1976), Sonny Bono Copyright Term Extension Act (CTEA), Pub. L. No. 105-298, 112 Stat. 2827 (1998) (codified as amended in scattered sections of 17 U.S.C.A.), Digital Performance Right in Sound Recordings Act (DPSRA) of 1995, Pub. L. No. 104-39, 109 Stat. 336 (1995) (codified as amended in scattered sections of 17 U.S.C.A.), and Audio Home Recording Act (AHRA) of 1992, 17 U.S.C. §§1001-1010 (2000).

[3] For a good historical overview, *see* William F. Fisher III, *The Growth of Intellectual Property: A History of the Ownership of Ideas in U.S. Law*, *available at* http://cyber.law.harvard.edu/people/tfisher/iphistory.pdf (last visited Apr. 18, 2006).

[4] James Boyle worries that the content industries' "preferred trifecta," "expansive intellectual property rights, digital fences, and enforceable click-wrap licenses," could effectively give IP owners perfect control over their works. Boyle, *Cruel, Mean or Lavish? Economic Analysis, Price Discrimination and Digital Intellectual Property*, 53 VAND. L. REV. 2007, 2020 (2000); *cf.* Hannibal Travis, *Pirates of the Information Infrastructure: Blackstonian Copyright and the First Amendment*, 15 BERKELEY TECH. L.J. 777, 861 (2000).

[5] For purposes of this paper, "critical IP scholars" include those who are generally skeptical of the existing IPR regime and want to change it in order to expand access to copyrighted, patented, and trademarked subject matter. More formally, such critical theorists aim at enlightenment and emancipation of a public they deem too quiescent in the face of expanding IP rights. *See generally,* RAYMOND GEUSS, THE IDEA OF A CRITICAL THEORY: HABERMAS AND THE FRANKFURT SCHOOL (1981) (discussing the key components of critical theories).

[6] LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD (2001); Yochai Benkler, *Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment*, 11 HARV. J.L. & TECH. 287 (1998).

enjoyed equally by a number of persons.'"[7] Classic examples of commons are parks, roads, and beaches.[8] Critical copyright scholars argue that software, music, and other intangible ideas share many qualities with these public goods,[9] such as non-rivalry in consumption, that make them ideal "commons" resources.[10] They argue that protection of a "creative commons"[11] from a "second enclosure movement"[12] is essential to free expression, economic competition, and equitable access to information.

Though most convincing as policy arguments for changing the law, these concerns find formal legal expression in the extant copyright doctrine of "fair use."[13] By guaranteeing individuals the right to make "fair uses" of copyrighted material without gaining the permission of the copyrightholder, the fair use doctrine enables the availability of a commons of intellectual resources. However, the meaning of the doctrine is deeply unsettled in the digital realm. This is largely because the statutory test for determining "fair use" requires courts to equitably balance four factors, and the analysis often turns on the fourth factor—the effect of the use on the potential market for the copyrighted work. As section II below demonstrates, this "effect on the market" analysis is often cursory and ad hoc, serving less to determine a result than to rationalize foreordained conclusions.

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[7] LAWRENCE LESSIG, THE FUTURE OF IDEAS 19 (2002) (quoting Oxford English Dictionary); *cf.* CAROL ROSE, *The Comedy of the Commons*, *in* PROPERTY AND PERSUASION: ESSAYS ON THE HISTORY, THEORY, AND RHETORIC OF OWNERSHIP 105, 106 (1994) (noting that American "legal doctrine has strongly suggested that some kinds of properties should not be held exclusively in private hands but instead should be open to the public or at least subject to the *ius publicum*, to use the Roman law terminology—the 'public right' [of use].").

[8] For a fuller treatment of commons, see ROSE, *The Comedy of the Commons, supra* note **Error! Bookmark not defined.**, at 111.

[9] Public goods are "goods whose consumption by one individual does not prevent their consumption by other individuals"—in other words, their consumption is nonrivalrous. DAVID COLANDER, MICROECONOMICS 117 (3d ed. 1998). Public goods are also often nonexcludable; i.e., it is impossible to keep unauthorized users from using the property or enjoying the benefits of the service. For example, it is difficult to deny the benefits of national defense to tax scofflaws.

[10] Douglas Noonan, *Internet Decentralization, Feedback, and Self-Organization*, *in* MANAGING THE COMMONS 188 (John Baden & Douglas Noonan eds., 2d ed. 1998); James Boyle, *A Politics of Intellectual Property: Environmentalism for the Net*, 47 Duke L.J. 87 (1997).

[11] *See* Lawrence Lessig, *The Creative Commons*, 55 FLA. L. REV. 763 (2003).

[12] *See* James Boyle, *The Public Domain: The Second Enclosure Movement and the Construction of the Public Domain*, 66 LAW & CONTEMP. PROBS. 33 (Winter/Spring 2003).

[13] Fair use originated as a judge-made doctrine, and is now codified in section 107 of the Copyright Act of 1976. *See* 17 U.S.C. § 107 (2000). As an affirmative defense to a copyright infringement suit, the fair use doctrine allows some use of copyrighted works without the permission of the copyright holder. *See id.* Fair use is a case-by-case, fact-dependent issue, determined by a four-part balancing test established in § 107. For historical background on "fair use," *see* WILLIAM F. PATRY, THE FAIR USE PRIVILEGE IN COPYRIGHT LAW (1995).

Responding to decisions restricting fair use, critical IP scholars have developed innovative First Amendment-based arguments for extending it in the digital realm.[14] Some have also proposed legislative and regulatory schemes to protect an intellectual commons.[15] While acknowledging the value of these approaches, this article proposes a different route: informing "fourth factor" (or "effect on the market") analysis with economic assessments drawn from efforts to value physical, real-space commons.[16] Environmental economists have developed sophisticated methods of measuring the value of commons in natural resources. Application of the techniques and concepts developed in environmental economics to "effect on the market" analysis in fair use cases would enable courts to recognize the Pareto-optimal features of an intellectual commons which restrictions on fair use threaten.

In the next part of this article, I examine "effect on the market" analysis in several cases responding to new technologies of copying (Part II). The article examines both pro- and anti-fair use cases in each of three broad categories of fair use disputes: consumptive use, technical compatibility, and transformative use.[17] In each category, two cases are contrasted.

Part III advances the claim that featured cases affirming fair use evince a stronger understanding of information economics than the anti-fair use cases with similar fact patterns. Both *Sony Corp. of America v. Universal City Studios, Inc.*[18] and *Sega v. Accolade*[19] take seriously the prevalence of complementarity in the information economy—i.e., the ways in which market competitors may ultimately thrive off one another's success. For example, it turned out that VCR's not only created substitutes (i.e., home videotapes) for programs marketed by copyright holders, but

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[14] *See, e.g.,* Yochai Benkler, *Free as the Air to Common Use: First Amendment Constraints on Enclosure of the Public Domain*, 74 N.Y.U. L. REV. 354 (1999).

[15] *See, e.g.,* Dan L. Burk & Julie E. Cohen, *Fair Use Infrastructure for Copyright Management Systems*, 15 HARV. J.L. & TECH. 41 (2001).

[16] I draw some inspiration from recent efforts to model the transmission of ideas (via memes) on the transmission of DNA (via genes). *See* JACK BALKIN, CULTURAL SOFTWARE (1998) (extensively exploring the similarities and differences between social reproduction of culture, mechanical reproduction of data and biological reproduction of organisms); STEPHEN WOLFRAM, A NEW KIND OF SCIENCE (2002) (discussing analogies between the operation of mechanical, computational and natural systems). Just as the dynamics of computer programs can help us understand the natural world, the dynamics of the natural world can help us understand our information ecology.

[17] This classification is based on the presentation of materials in a leading casebook. *See* JULIE COHEN ET AL., COPYRIGHT IN A GLOBAL INFORMATION ECONOMY 496 (2002). Cohen, Loren, Okedji, and O'Rourke classify three broad types of fair use cases: cultural interchange, consumptive use, and technical use. I have referred to the "cultural interchange" category here as "transformative use," because it captures some cases that feature copyrighted expression that is not necessarily a cultural object.

[18] 464 U.S. 417 (1984).

[19] 977 F.2d 1510 (9th Cir. 1993).

also strongly complemented that market by creating the infrastructure necessary for the rise of video rental stores.[20] The majority opinion in *Kelly v. Arriba Soft Corp.*[21] appreciated the economics of experience goods—i.e., those goods that usually must be experienced before an informed purchase can be made—to a much greater extent than the rival *Video Pipeline, Inc. v. Buena Vista Home Entertainment, Inc.*[22] decision. *Kelly*'s website provided important advertising and publicity for the images it collected, permitting the kind of previewing and browsing that has been documented as essential to successful marketing strategies in the internet age.

If all this a true, a skeptical reader might press, why aren't all courts recognizing the complementarities, network effects, and experience good effects of unauthorized uses? Admittedly, the complementarities evident in cases like *Sony* and *Kelly* will not always approach the magnitude of the substitutional effect of new uses of copyrighted work. For example, regardless of how much the centralized file-sharing system in *Napster* advertised music via the "hotlists" prevalent on the P2P network, that effect was not likely to outweigh the substitutive effect of free MP3's.[23] Yet a judgment of magnitude like that evident in *Napster* depends on an antecedent valuation of the positive effects of unauthorized use. Environmental economics can be very helpful in correcting judicial biases against acknowledging the full weight of complementarities, network effects, and experience good effects.

Courts tend to discount these effects because of their restricted time horizons and their inexperience with nonmarket valuation. In order to get a fuller sense of the value of an *intellectual* commons protected by fair use,[24] litigants should examine the type of abstract, generalizable valuation of *environmental* commons pioneered by economists studying biodiversity (Part III). Environmental approaches to valuation focus on three key factors ignored by conventional economic analysis: 1) the long-term impact of privatizing a commons resources, 2) the diffuse benefits of commons resources, and 3) the "ecosystem services" provided by undeveloped land. By employing methods like hedonic pricing and contingency valuation, environmental economists have put monetary value on the positive effects

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[20] *See* Brett Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917 (2005); Lawrence Lessig, *Reply: Re-Marking the Progress in Frischmann*, 89 MINN. L. REV. 1031 (2005).

[21] 77 F.Supp.2d 1116 (C.D. Cal. 1999).

[22] 342 F.3d 191 (3d Cir. 2003).

[23] *See, e.g.,* Felix Oberholzer & Koleman Strumpf, *The Effects of File-Sharing on Record Sales: An Empirical Analysis* (Mar. 2004) (unpublished manuscript, on file with The University of North Carolina), *available at* http://www.unc.edu/~cigar/papers/FileSharing_March2004.pdf.

[24] Given the doctrinal focus on the effects on the market for the plaintiff's work, this paper focuses on the value of the new use to the copyrightholder; however, many of the points apply *a fortiori* to the value of the use to society at large.

of conservation.

The following chart suggests the match between the problems suffered by "effect on the market" analysis and the solutions offered by biodiversity valuation:

	Shortcoming of "Effect on the Market" Analysis in Fair Use	**Complementary Achievement of Scholarship in Biodiversity Valuation**
Time Horizon	Too often undervalues long-term Pareto-optimal or Kaldor-Hicks optimal impact of disruptive technologies.	Sets "option" and "bequest" values on biodiversity as raw material for future exploitation. Valuation via contingency and hedonic pricing methods.
Complementary Products	Unwilling to systematically explore benefits to content owners of products which complement their work and thus increase the value of paid uses.	Inquires into the value of "wilderness" complementing adjoining, developed land. Explores the full range of uses for ecosystems, and their diffuse benefits.
Network Effects	Ignores how a network of fair uses may make parallel paid uses more likely.	Examines the role of ecosystems in enabling other productive economic activity.

Over the past thirty years, environmentalists have shifted from emphasizing the "pricelessness" of common environmental resources to quantitatively analyzing the price we pay for their neglect. Would-be protectors of a commons of ideas could benefit from a similar shift in rhetoric. Given its growing impact on policy, economic analysis is certain to play an increasingly important role in intellectual property law. New valuation techniques that capture hitherto under-recognized values of fair use can enrich this economic analysis.

II. ASSESSING THE EFFECT OF UNAUTHORIZED USE ON THE VALUE OF THE COPYRIGHTED WORK

Empowered by the Constitution to "promote the progress of science and useful arts"[25] by giving exclusive rights of ownership over intellectual

[25] Article I, Section 8, of the Constitution provides that "The Congress shall have power . . . [t]o promote the progress of science and useful arts, by securing for limited times to

property, Congress has passed several laws protecting copyrights in literature, music, software, and much other subject matter. Courts have limited the protection of copyright to particular *expressions* of ideas, and not to ideas themselves. Courts have also refused to find infringement where the defendant made "fair use" of a work.[26] In the 1976 Copyright Act, Congress codified this "fair use" exception as the first of fourteen statutory limits on the powers of copyrightholders:

> Notwithstanding the provisions of sections 106 and 106A [enumerating copyrightholders' rights], the fair use of a copyrighted work . . . is not an infringement of copyright. In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include --
>
> > (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
> > (2) the nature of the copyrighted work;
> > (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
> > (4) the effect of the use upon the potential market for or value of the copyrighted work.[27]

As technologies of copying have exponentially increased in availability and effectiveness,[28] so too have the number and diversity of fair use defenses to copyright infringement actions.[29]

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authors and inventors the exclusive right to their respective writings and discoveries." U.S. CONST. art. 1, § 9, cl. 8. "The primary objective of copyright is not to reward the labor of authors, but '[t]o promote the Progress of Science and useful Arts.'" Feist Publications, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 349 (1991) (quoting U.S. CONST. Art. I, § 8, cl. 8).

[26] WILLIAM F. PATRY, THE FAIR USE PRIVILEGE IN COPYRIGHT LAW (2nd ed., 1995). The term "fair use" originate in Lawrence v. Dana, 15 F. Cas. 26 (C.C.D. Mass. 1869) (No. 8136). For a historical look at "fair use," *see generally* CRAIG JOYCE ET AL., COPYRIGHT LAW 722-23 (1998); Lydia Pallas Loren, *Redefining the Market Failure Approach to Fair Use in an Era of Copyright Permission Systems*, 5 J. INTELL. PROP. L. 1, 4 (1997).

[27] 17 U.S.C. § 107 (2000).

[28] Richard P. Adelstein & Steven I. Peretz, *The Competition of Technologies in Markets for Ideas: Copyright and Fair Use in Evolutionary Perspective*, 5 INT'L REV. L. & ECON. 209, 223 (1985) (noting that it took approximately one man-year to copy a book on paper in 1000 A.D., but took less than an hour to photocopy the same in the late twentieth century).

[29] The classic fair use case involved abridgment of or commentary on literary works. I classify such commentaries, as well as more modern appropriations and arrangements of copyrighted works, as transformative uses, and examine two representative cases in Section C below. Another category of fair use cases has arisen with the spread of new technologies of copying. I classify this category as "consumptive," since it largely involves copying *vel non* of existing work. This category is explored in Section A below. Finally, given the copyrightability of software, a new line of cases has arisen involving the right to make one or a few copies of a competitor's software in order to repair hardware running the software

Recognizing the emptiness of the second and third factors,[30] and the manipulability of the first,[31] the Supreme Court and several appellate courts have focused on the fourth factor in fair use cases.[32] The factor's prescribed "effect on the market analysis" has assumed great importance: It was called "undoubtedly the single most important element of fair use" in the landmark *Harper & Row* decision, and has been critical to the holding in several cases. As the Nimmer treatise states, "Fair use, when properly applied, is limited to copying by others which does not materially impair the marketability of the work which is copied."[33]

Like fair use doctrine generally, "effect on the market" analysis is in flux. There are a few fixed guideposts: Clearly commercial uses are suspect, and "transformative" or "productive" uses are treated more

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or to develop similar software or hardware. Classed as "technical interoperability" cases, these are discussed in Section B below.

[30] Ty, Inc. v. Publ'ns Int'l Ltd., 292 F.3d 512, 522 (7th Cir. 2002) ("Factors (1) and (2) are empty, except that (1) suggests a preference for noncommercial educational uses, picking up the reference earlier in the statute to 'teaching . . . scholarship or research.' Factor (3) is inapplicable to Beanie Babies, each one of which is copyrighted separately, so that there can be no partial copying as a matter of fact (no one, we imagine, wants a photograph of part of a Beanie Baby)."). Ironically, to the degree that the home tapers copied the entire work and watched *all* of it (including the ads, in the manner the plaintiffs hoped they would), that may well have counted against them in the third factor inquiry (the amount and substantiality of the use).

[31] The key determinations in the first factor are commerciality (which goes to the purpose of the use) and transformativeness (which goes to the character of the use). Definitions of commerciality are notoriously divergent. *Compare* A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004 (9th Cir. 2001) (characterizing private copying as commercial) *with* Sony Corp. of Am. v. Universal City Studios, Inc, 464 U.S. 417 (1984) (characterizing such copying as noncommercial). The vanishingly thin line between parody and satire, valiantly maintained in the *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569 (1994), decision, is a classic example of the degree of judicial discretion permitted in the "transformativeness" determination.

[32] Harper & Row Publishers, Inc. v. Nation Enters., 471 U.S. 539 (1985); NIMMER ON COPYRIGHT § 13.05[A][4] (2003) ("If one looks to the fair use cases, if not always to their stated rationale, this emerges as the most important, and indeed, central fair use factor."). But see the Second Circuit's rejection of this idea:

> Prior to *Campbell*, the Supreme Court had characterized the fourth factor as 'the single most important element of fair use.' However, *Campbell*'s discussion of the fourth factor conspicuously omits this phrasing. Apparently abandoning the idea that any factor enjoys primacy, *Campbell* instructs that '[a]ll [four factors] are to be explored, and the results weighed together, in light of the purposes of copyright.'

American Geophysical Union v. Texaco Inc., 60 F.3d 913, 926 (2d Cir. 1995) (quoting *Campbell*, at 574) (citations omitted). The Nimmer treatise continues to advance the effective primacy of the fourth factor, via its proposed "functional test" for fair use. NIMMER ON COPYRIGHT § 13.05[A][4] (2003).

[33] 1 NIMMER ON COPYRIGHT § 1.10[D], at 1-87; *see also* 3 NIMMER ON COPYRIGHT § 13.05[A], at 13-76 (collecting cases).

favorably than mere copying.[34] Courts must keep in mind not only the case at hand, but also its potential ramifications: A use is not fair if "it would adversely affect the potential market for the copyrighted work" should it "become widespread."[35] The assessment is rife with hypotheticals: The court has to assess effect on the *potential* market for the work and for *derivative works,* if the examined use *were to become widespread.*

Assessing the effect of an allegedly infringing use or derivative work on the value of a copyrighted work is a difficult task. Users of virtually every new technology of copying and distribution that has emerged since the 1976 Act have advanced fair use defenses; only rarely have the courts consistently affirmed or proscribed a use. A brief exploration of leading lines of cases dealing with new technologies and fair use reveals that the economic analysis deployed to assess "marketability" is too-often cursory, partial, and uninformed by the latest in information economics. However, more complete analysis—most evident in the historic *Sony* majority and dissent, and also in recent Ninth Circuit decisions on software decompilation and image search engines—points the way to more rigorous "effect on the market" analyses.

Each of the sections below considers cases where rather similar activities are given radically different "fair use" treatment. In each situation, the court's analysis of the economic effect of the unauthorized use proved decisive. In pro-fair use cases, judicial acknowledgment of the positive effects of unauthorized use on the value of the plaintiff's work contributed significantly to a fair use finding. In the anti-fair use cases, a refusal to credit positive effects led to an unambiguous finding of market substitution and a negative fair use finding. While remaining agnostic as to the results in these cases, this article demonstrates that the economic *methods* either explicitly embraced or adumbrated in the pro-fair use cases are far superior to those evident in the parallel anti-fair use cases explored here. As Parts III and IV show, the economic approach of the pro-fair use cases is not merely idiosyncratic to the fact situations presented by the VCR, internet search engines, or video game software, but is generalizable to a wide range of cases.

A. CONSUMPTIVE USES: DIRECT COPYING IN *SONY* AND *PRINCETON UNIV. PRESS*

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[34] "If the intended use is for commercial gain, [the] likelihood [of market harm] may be presumed. But if it is for a noncommercial purpose, the likelihood must be demonstrated." *Sony*, 464 U.S. at 451. However, "[n]o 'presumption' or inference of market harm that might find support in *Sony* is applicable to a case involving something beyond mere duplication for commercial purposes." *Campbell*, 510 U.S. at 591 (giving the benefit of the doubt to "productive" or "transformative" uses).

[35] *Sony,* 464 U.S. at 451 (arguing that the more transformative the use, the less the "effect on the market" analysis matters).

Of all the purposes of the fair use doctrine, perhaps the most sacrosanct is the "educational use" exemption.[36] Congress has shown special solicitude toward the plight of the student and researcher attempting to acquire knowledge. However, a leading case from the Sixth Circuit now prohibits professors there from assembling readings into coursepacks without getting licenses from the relevant copyrightholders. Despite the Supreme Court's affirmation of the fairness of private copying of *entire* television programs in *Sony v. Universal,* the Sixth Circuit insisted that the copying of *parts* of materials with far greater educational value was not a fair use. The courts' very different understandings of the economics of unauthorized use are essential to the divergent findings.

1. Photocopying of Printed Works

In the mid-1970s, technological advances in the mechanical reproduction of printed documents gave an unprecedented number of individuals and institutions the opportunity to copy articles and even books. Several institutions took advantage of the new technology in order to reduce their number of subscriptions to expensive, specialized journals.[37] In 1974, the Williams & Wilkins Co., publishers of medical research journals, sued the National Institutes of Health (NIH) and its affiliated National Library of Medicine (NLM) for their practice of copying and distributing articles to staff members.[38] The NIH didn't copy journals wholesale—it limited copying to 50 pages per article, one article per journal, and one copy per request. Nevertheless, its copying was substantial,[39] and Williams &

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[36] 17 U.S.C. § 107 (2000).

[37] The debate continues to this day. The Wellcome Trust in England recently "argued that the present market structure in journal publishing does not work to the advantage of scientists [in part because] . . . publishers have raised their prices during the past decade well above inflation." Editorial, *21st-century Biomedical Journals: Failures and Futures*, 362 LANCET 9395 (2003) (citing THE WELLCOME TRUST, ECONOMIC ANALYSIS OF SCIENTIFIC RESEARCH PUBLISHING (2003)); cf. Paul A. David, *A Tragedy of the Public Knowledge "Commons"? Global Science, Intellectual Property and the Digital Technology Boomerang* (SIEPR Discussion Paper no. 00-02, Stanford Institute for Economic Policy Research, 2000), *available at* http://siepr.stanford.edu/papers/pdf/00-02.html (last visited Apr. 18, 2006); Amanda Schaffer, *Open Access: Should Scientific Articles Be Available Online and Free to the Public?*, SLATE, Dec. 16, 2004, http://slate.msn.com/id/2111023; Rick Weiss, *A Fight for Free Access to Medical Research Online Plan Challenges Publishers' Dominance*, WASH. POST, Aug. 5, 2003, at A1, *available at* http://www.washingtonpost.com/ac2/wp-dyn/A19104-2003Aug4?Language=printer; Samuel E. Trosow, *Copyright Protection for Federally Funded Research: Necessary Incentive or Double Subsidy?,* 22 CARDOZO ARTS & ENT L.J. 613 (2004).

[38] Williams & Wilkins Co. v. United States, 487 F.2d 1345 (Ct. Cl. 1973), *aff'd by an equally divided court*, 420 U.S. 376 (1975).

[39] The panel concedes that NLM in particular provided interlibrary loans not only to other public agencies but also to private sector scientists:

Wilkins argued that the substitution of library copies for purchased subscriptions threatened the viability of several journals.

Decided before the 1976 Copyright Act became effective, Williams & Wilkins was based on the extant "federal common law" of fair use doctrines.[40] In ruling in favor of the federal medical research agencies, the court found that "there is inadequate reason to believe, that [the plaintiff] is being or will be harmed substantially by these specific practices of NIH and NLM."[41] The defendant's expert had provided a comprehensive study of the effect of photocopying on the medical journal industry.[42] Plaintiff responded to this report with anecdotal evidence of subscriptions cancelled due to researchers' substitution of photocopies of desired articles for the journals from which they came. The court rejected this as a just-so story, but also proposed several of its own:

> If photocopying were forbidden, the researchers, instead of

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> In 1968, a representative year, NLM received about 127,000 requests for interlibrary loans. Requests were received, for the most part, from other libraries or Government agencies. However, about 12 percent of the requests came from private or commercial organizations, particularly drug companies. Some requests were for books, in which event the book itself was loaned. Most requests were for journals or journal articles; and about 120,000 of the requests were filled by photocopying single articles from journals, including plaintiff's journals. Usually, the library seeking an interlibrary loan from NLM did so at the request of one of its patrons. If the "loan" was made by photocopy, the photocopy was given to the patron who was free to dispose of it as he wished. NLM made no effort to find out the ultimate use to which the photocopies were put; and there is no evidence that borrowing libraries kept the "loan" photocopies in their permanent collections for use by other patrons

Williams & Wilkins, 487 F.2d at 1349.

[40] *Williams & Wilkins* is still relevant because Congress meant § 107 (effective Jan. 1, 1978) "to restate the present judicial doctrine of fair use, not to change, narrow, or enlarge it in any way." H.R. Rep. No. 94-1476 (1976); S. Rep. No. 94-473 (1975).

[41] *Williams & Wilkins,* 487 F.2d at 1354. The court also found "that medicine and medical research will be injured by holding these particular practices to be an infringement" and "since the problem of accommodating the interests of science with those of the publishers (and authors) calls fundamentally for legislative solution or guidance, which has not yet been given, we should not, during the period before congressional action is forthcoming, place such a risk of harm upon science and medicine." *Id.*

[42] The panel was skeptical about the publishers' claims of poverty. It observed that "between 1958 and 1969 annual subscriptions to the four medical journals involved increased substantially (for three of them, very much so), annual subscription sales likewise increased substantially, and total annual income also grew," and that "plaintiff's business appears to have been growing faster than the gross national product or of the rate of growth of manpower working in the field of science." *Id.*, at 1357. The "rate of growth" point is a fascinating nod in the direction of "reasonable rate of return" regulation for intellectual property under compulsory licensing/liability rules. For a fuller discussion of compulsory licensing, *see* Matthew Fagin *et al., Beyond Napster: Using Antirust Law to Advance and Enhance Online Music Distribution,* 8 B.U. J. SCI. & TECH. L. 451, 523 (2002).

> subscribing to more journals or trying to obtain or buy back-issues or reprints (usually unavailable), might expend extra time in note-taking or waiting their turn for the library's copies of the original issues -- or they might very well cut down their reading and do without much of the information they now get through NLM's and NIH's copying system… In the absence of photocopying, the financial, time-wasting, and other difficulties of obtaining the material could well lead, if human experience is a guide, to a simple but drastic reduction in the use of the many articles (now sought and read) which are not absolutely crucial to the individual's work but are merely stimulating or helpful.[43]

In the absence of concrete proof of the detriment of copying to the copyright-holders, the court was loathe to permit them to veto NIH's use of the works.

Twenty years later, in *American Geophysical Union v. Texaco, Inc.*, the Second Circuit reached a very different result in a very similar case (over a dissent which reprised the reasoning of *Williams & Wilkins*).[44] The American Geophysical Union (AGU), along with 82 other publishers of scientific and technical journals, sued Texaco for permitting its researchers to copy and distribute articles from their publications.[45] The court ruled that "such institutional, systematic copying" did not constitute fair use under § 107 of the Copyright Act.[46] Though the court rejected *Harper*'s characterization of the "effect on the market" factor of fair use analysis as the "single most important element" of the fair use analysis, its treatment of the factor was pivotal to the outcome of the case.[47]

The court in *AGU* observed that two markets existed for the articles and journals at issue: "a traditional market for, and hence a clearly defined value of, *journal issues and volumes,*" and another, untraditional market for "*individual journal articles*" which (as yet) had not generated any "clearly

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[43] *Williams & Wilkins,* 420 U.S. at 1358.

[44] *American Geophysical Union* v. *Texaco Inc.*, 60 F.3d 913 (2d Cir.1995).

[45] *Id.* at 915.

[46] *Id.* at 932. The differing results may have something to do with the ultimate purposes of the use in question—NIH focused on medical research with obvious public significance, whereas Texaco presumably focused on narrow commercial endeavors. Sensitive to the problem of the non-representative litigant, William Fisher proposed that courts consider "the universe of activities vis-a-vis" the copyrighted work when deciding individual fair use cases. William Fisher, *Reconstructing the Fair Use Doctrine*, 101 HARV. L. REV. 1661, 1706 (1988). As the *NIH/Texaco* divide shows, courts would also do well to consider the universe of purposes to which the contested use could be put. One may criticize Fisher for the impracticality of his proposal. However, it would represent a step toward the consideration of long-term beneficial effects I think necessary to fair use analysis, and the speculative nature of potential uses could be discounted by an appropriate formula reflecting the relative (un)likelihood of their development.

[47] *AGU*, 60 F.3d at 930-31.

defined value" for individual articles.[48] Endorsing the district court's agnosticism on the matter, a majority of the panel held that even widespread adoption of Texaco-type copying would not necessarily harm the marketability of "additional journal subscriptions, back issues, and back volume" in the traditional market for these materials.[49] However, in the twenty years between *Williams & Wilkins*, a number of new markets for individual articles had arisen, including authorized document distributors and the Copyright Clearance Center.[50] Based on these decisions, the appellate panel concluded that

> if Texaco's unauthorized photocopying was not permitted as fair use, the publishers' revenues would increase significantly since Texaco would (1) obtain articles from document delivery services (which pay royalties to publishers for the right to photocopy articles), (2) negotiate photocopying licenses directly with individual publishers, and/or (3) acquire some form of photocopying license from the Copyright Clearance Center Inc. ("CCC").[51]

Concluding that "the right to seek payment for a particular use tends to become legally cognizable under the fourth fair use factor when the means for paying for such a use is made easier," the majority held that Texaco's copying was not a fair use.[52]

It's hard not to see the circularity here: the Copyright Clearance Center allegedly makes licensing schemes viable, but is itself only a plausible enterprise if courts require licenses for the services it offers (by negating fair use defenses).[53] The dissent takes the majority to task for assuming the existence of a viable market for individual articles, noting that "individual publishers remain free to stand upon the rights conferred in this Court's opinion, and negotiate separate licenses with separate terms, or sell

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[48] *Id.*

[49] "[T]he evidence concerning sales of additional journal subscriptions, back issues, and back volumes does not strongly support either side with regard to the fourth factor." *Id.* at 929. *Cf. Sony*, 464 U.S. at 451-55 (rejecting various predictions of harm to value of copyrighted work based on speculation about possible consequences of secondary use).

[50] "Copyright Clearance Center, Inc., the largest licenser of text reproduction rights in the world, was formed in 1978 to facilitate compliance with U.S. copyright law. . . . The company currently manages rights relating to over 1.75 million works and represents more than 9,600 publishers and hundreds of thousands of authors and other creators, directly or through their representatives." Copyright Clearance Center, *Corporate Overview*, http://www.copyright.com/ccc/do/viewPage?pageCode=au1 (last visited Apr. 12, 2006).

[51] *AGU*, 60 F.3d at 930-31 (citing 802 F. Supp. 1, 19 (the district court opinion)).

[52] *Id.*

[53] In Lydia Loren's words, "The argument that 'lost' permission fees are proof of fourth factor harm has as its premise the legal conclusion at issue: that the use at issue is not a fair use and, therefore, the owner is allowed to charge permission fees for such use." Lydia Pallas Loren, *Redefining the Market Failure Approach, supra* note 26, at 5.

offprints and refuse any license at all."[54] Calling the market for licensing "cumbersome and unrealized," the dissent would have called Texaco's use fair.[55]

The Sixth Circuit divided over the same issue in an en banc ruling three years after *AGU*. In *Princeton University Press v. Michigan Document Services, Inc.*, the majority held that a duplicator of "coursepacks" containing excerpts from books assigned in college classes was liable for infringement.[56] The majority stated that the plaintiffs "need only show that if the challenged use `should become widespread, it would adversely affect the potential market for the copyrighted work.'"[57] Admitting that virtually any copyrightholder could deem a hitherto fair use a means of denying the owner potential revenues from the work, the majority limited its holding on the fourth factor to consideration of effects on "'traditional, reasonable, or likely to be developed markets."[58] Of course, the likelihood of development of such markets is endogenous to the very decision supposedly determined by it.

The majority directly addressed this circular reasoning by claiming that nearly any copyright claim assumes the copyrightholder's right to revenues from the infringed work.[59] This conceptual legerdemain did not impress the dissenters. As Judge Ryan complained, the majority's treatment of "potential" markets for the articles in question was underspecified:

> [T]he publishers do not claim that they sought to publish compilations or anthologies but were thwarted by the existence of the coursepacks. There is no evidence that the publishers are interested in or capable of customizing their copyrighted works to accommodate the specific, limited, and frequently updated requests of individual professors. There is no evidence even that

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[54] *AGU*, 60 F.3d at 937 (Jacobs, J., dissenting).

[55] *Id.*

[56] *Princeton*, 99 F.3d 1381 (1997).

[57] *Id.*. at 1396 (quoting Harper & Row, 471 U.S. 539, 568 (1985) (quoting Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 451 (1984))).

[58] *Princeton*, 99 F.3d at 1407 (quoting Am. Geophysical Union v. Texaco Inc., 60 F.3d 913, 930-31 (2d Cir. 1994), *cert. dismissed*, 516 U.S. 1021 (1995)).

[59] Here is the *Princeton* majority's response to the "circularity" point:

> [i]magine that the defendants set up a printing press and made exact reproductions -- asserting that such reproductions constituted "fair use" -- of a book to which they did not hold the copyright. Under the defendants' logic it would be circular for the copyright holder to argue market harm because of lost copyright revenues, since this would assume that the copyright holder had a right to such revenues.

Princeton, 99 F.3d at 1387. It is difficult to see how the self-evidence of infringement in this hypothetical demonstrates the same in the much closer case before the court in *Princeton*—particularly given Congress's specific imprimatur upon "multiple copies for classroom use." 16 U.S.C. § 107 (2000).

> the publishers seek to license the compilation of excerpts by a third party who is equipped to assemble the compilations but refuses to do so without an agreement that the publishers grant it exclusive rights to publish the excerpts. Thus, there is no evidence that the value of the copyrighted works in a potential market was harmed in any way by the production of the coursepacks challenged in this case.[60]

Judge Martin's dissent also questioned the publishers' right to set the precise terms of use of their works via "effect on the market" analysis:

> [T]he publishers would prefer that students purchase the publications containing the excerpts instead of receiving photocopies of excerpts from the publications. . . . What the publishers would "prefer" is not part of the analysis to determine the effect on the potential market. . . . The facts demonstrate that it is only wishful thinking on the part of the publishers that the professors who assigned the works in question would have directed their students to purchase the entire work if the excerpted portions were unavailable for copying. . . . [I]t seems more likely that they would have omitted the work altogether instead of requiring the students to purchase the entire work.[61]

The Martin dissent rightly implies that publishers ought not to be able to dictate extremely restrictive terms for the use of printed materials—particularly in the educational context. But neither dissent fully recognizes that copyrightholders may only be able to develop low-cost licensing via collective rights societies if they have the power to prevent unauthorized use.[62]

Neither the majority nor dissenting opinions in *AGU* and *Princeton* squarely confront the consequences of their position. In place of systematic analysis of the results of restricting or denying fair use, they tend to assume that which needed to be proved (a potentially viable copyright clearance market, in the case of the majority, or the implausibility of such a market, in the case of the dissent). The majority opinions also omit entirely the great (if diffuse) benefits to publishers afforded by a robust regime of fair use—such as effective "advertising" of the journals in question, more prestigious editorial boards hoping to reach a wider audience, and more willing submissions from authors motivated primarily by the hope of reaching a broad audience (as opposed to gaining a profit). The Supreme Court's

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[60] *Princeton*, 99 F.3d at 1396 (Martin, J., dissenting).

[61] *Id.*

[62] *See, e.g.*, Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293 (1996) (advocating property rules as incentives for the creation of CROs that are more capable than courts at valuing intellectual property).

decision in *Sony v. Universal Studios* provides some clues on how courts can better incorporate these factors into fair use determinations.[63]

2. Home Videotaping

In 1986 the Supreme Court decided that noncommercial taping of television programs was a "fair use" of such programs. In the course of describing the "substantial noninfringing uses" of the videocassette recorder (VCR), the Court held "unauthorized time shifting" (i.e., a viewer's taping a program in order to watch it later than its original broadcast) was a "fair use" of the program under § 107 of the Copyright Act.[64] The decision rested in large part on the court's recognition that the VCR not only created tapes that substituted for the plaintiffs' work, but also complemented that work in many ways.

The plaintiffs had claimed that "'consumptive uses of copyrights by home VTR users [substitute for their works because a] consumer . . . will not buy tapes separately sold by the copyrightholder'" if they are able to make tapes at home.[65] The plaintiffs also claimed that the VCR would decimate advertising revenue because users would simply fast-forward commercials. The plaintiffs would have had the court enjoin the sale of VCRs altogether, or, failing that, force defendants to remove the "record" and "fast forward" buttons from the machine.[66]

Aided by the district court's comprehensive inquiry into the effects of VCRs, the *Sony* majority was able to examine a wide range of effects of the new technology, and took into account its potential benefits for the

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[63] Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417 (1984).

[64] *Id.* at 417. Addressing the first factor, the majority found that while the character of the use (mere copying) was nontransformative (a strike against fair use), the purpose of the use was noncommercial, and therefore the first factor militated in favor of the copiers. The majority essentially ignored the second and third factors, asserting without argument that they did not weigh against time-shifting even though normally one might expect that each would. The majority reserved its most comprehensive analysis for its discussion of the fourth fair use factor, "the effect of the use upon the potential market for or value of the copyrighted work." Given that the use at issue was noncommercial, the burden was on the plaintiffs to demonstrate that home videotaping impaired the marketability of their work.

[65] *Home Recording of Copyrighted Works: Hearing Before the Subcomm. on Courts, Civil Liberties and the Administration of Justice of the H. Comm. on the Judiciary*, 97th Cong., 1250 (1982) (memorandum of Prof. Laurence H. Tribe). Virtually the same argument was accepted by the *Napster* court, which characterized private copying in that case as commercial because it substituted for purchase of the materials. A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004 (9th Cir. 2001). Since a copyrightholder will always license material at *some* price, such a broad interpretation of commerciality would of course render nearly every putative fair use commercial.

[66] *See* JAMES LARDNER, FAST FORWARD: A MACHINE AND THE COMMOTION IT CAUSED (1987); Randal C. Picker, *Rewinding Sony: The Evolving Product, Phoning Home and the Duty of Ongoing Design*, 55 CASE W. RES. L. REV. 749 (2005).

complaining copyrightholders. Citing the district court's summary of its fair use finding, the majority explained:

> The audience benefits from the time-shifting capability have already been discussed. It is not implausible that benefits could also accrue to plaintiffs, broadcasters, and advertisers, as the Betamax makes it possible for more persons to view their broadcasts.[67]

We might classify the potential effects of VTR usage on live TV and theater viewing as either substitutional or complementary. To the extent the plaintiffs' predictions of reduced viewership held true, the VTR would be a substitute for live viewership. However, to the extent that VTRs encouraged viewers to become more dedicated to certain programs or stars, or whetted their appetite for audiovisual works generally, VTRs would complement live viewership. Demand for VTR-recorded material would then "spill-over" into demand for more live material, instead of "compensating" for its lack.[68]

Explicit recognition of these rival effects marked an important advance in the law of fair use. The majority explicitly acknowledges the very real possibility of lost viewers and advertising dollars for the plaintiffs, but it also factored in the potential benefits of widespread VCR distribution, and presciently concluded that these new opportunities would swamp its negative effects.[69] The *Sony* majority recognized that "effect on the market" analysis should not end with a determination that a contested use would potentially have negative effects on a potential market for copyrighted work. Potential positive effects are relevant as well.[70]

The *Sony* dissent criticized the majority by comparing the individualistic, personal "use" of copyrighted materials via VCR recording to classic fair uses, including those "listed in [§] 107 itself . . . [such as] criticism, comment, news reporting, teaching, . . . scholarship, or research."[71] The dissent deems these uses "productive," as opposed to the "ordinary" use of delayed viewing of television programs, and states that in "no case in [has] the reproduction of a copyrighted work for the sole benefit of the user has been held to be fair use."[72] Though unavailing, this argument too hints at a more sophisticated economic analysis of the market

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[67] *Sony*, 464 U.S. at 454.
[68] Jon Elster's delineation of "compensation" and "spill-over" effects is less economistic than the average substitute/complement analysis, and is particularly helpful in analyzing "creative industries." *See* JON ELSTER, NUTS AND BOLTS FOR THE SOCIAL SCIENCES 45 (1989).
[69] *Sony*, 464 U.S. at 454.
[70] *Id.*
[71] *Id.* at 485 (Blackmun, J., dissenting).
[72] *Id.* at 479.

effects of a fair use finding. "Productive" uses are protected in part because they can complement, and not merely compete with, the copyrighted work.

3. Superior Legal and Economic Analysis in *Sony*

It is easy to reconcile the cases on the basis of the *location* of the copying. The copying in *Sony* happened within homes, whereas the *Texaco* and *Princeton University Press* cases involved copying within a business. However, this distinction is not as important to the ultimate resolution of the cases as it might appear on first blush. Given the prevalence of physical and digital copying equipment, it is easy to imagine the activities in the photocopying cases occurring within the comfort of the defendants' homes. It is doubtful that this would make much difference to the analysis of the cases.

More important to the divergent outcomes is the cases' style of economic analysis. *Texaco* and *Princeton University Press* idealize a world in which every use that can be paid for is paid for. They do not even acknowledge the positive effects of unauthorized use, or the historical dependence of academic inquiry on the unfettered flow of information. They certainly do not appear to appreciate the reputational goods so crucial to the academic enterprise, where a young assistant professor may wisely decide that adoption of his monograph or article in leading courses on a topic is worth far more than the royalties he might be able to extract from users. Even if the publishers who ultimately controlled the copyright in such works failed to recognize their own interest in the enhanced reputation of their authors, the court should have recognized this.

By contrast, *Sony* evidences a sophisticated understanding of the economics of broadcasting. It "rejected respondents' prediction 'that live television or movie audiences will decrease as more people watch Betamax tapes as an alternative,'" observing that "'[there] is no factual basis for [the underlying] assumption.'"[73] The majority also agreed with the district court's conclusion that, "To the extent any decrease in advertising revenues would occur, the court concluded that the Studios had 'marketing alternatives at hand to recoup some of that predicted loss,'"[74] since "[Plaintiffs] stand ready to make their product available in cassettes and compete with the VTR industry."[75] In other words, the onus was on the copyrightholders to adjust to the new technology, and not vice versa.

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[73] Sony Corp. of Amer. v. Universal City Studios, Inc. [hereinafter *Sony*], 464 U.S. 417, 452 (1984) (quoting Universal City Studios v. Sony Corp. of Amer., 480 F. Supp. 429, 466 (Cal. Dist. Ct. App. 1979)). The district court had rejected respondents' "fear that persons 'watching' the original telecast of a program will not be measured in the live audience and the ratings and revenues will decrease," by observing that current measurement technology allows the Betamax audience to be reflected. 480 F. Supp. at 466.

[74] *Sony*, 464 U.S. at 484 (quoting 480 F. Supp. at 452)

[75] Universal City Studios v. Sony Corp. of Amer., 480 F. Supp. at 452.

Assuming the development of future "marketing alternatives" may appear to be a facile response to copyrightholders' concerns about losing control of their work. However, the *Sony* Court could rely on evidence that the VTR had already enhanced the value of the copyrights at issue in many ways, and would continue to do so. The fast-forwarding audience lost to advertisers may well have been offset by those who, once consigned by work or "counterprogramming" to miss shows, now would be able to view them later. Quoting the district court's summary of its fair use finding, the majority explained:

> The audience benefits from the time-shifting capability have already been discussed. It is not implausible that benefits could also accrue to plaintiffs, broadcasters, and advertisers, as the Betamax makes it possible for more persons to view their broadcasts.[76]

Here the majority explicitly acknowledged the very real possibility of lost viewers and advertising dollars for the plaintiffs.[77] However, it also factored in the potential benefits of widespread VTR distribution, and presciently concluded that these new opportunities would swamp its negative effects. The *Sony* majority recognized that "effect on the market" analysis should not end with a determination that a contested use would potentially have negative effects on a potential market for copyrighted work. Potential positive effects are relevant as well.

B. TECHNICAL COMPATIBILITY CASES

The Ninth Circuit reprised the *Sony* majority's comprehensive economic analysis in *Sega v. Accolade*.[78] Defendant Accolade had "reverse engineered" Sega's computer game software in order to make its own products interoperable with Sega's hardware (the "Genesis console") and software. The reverse engineering required copying and "disassembly" or "decompilation" of Sega's game software.[79] Among other defenses,

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[76] *Sony*, 464 U.S. at 454 (quoting 480 F. Supp. at 452).

[77] *Id.*. Compare *Napster*, which refused to acknowledge positive effects once the court determined that Napster would harm the plaintiffs' entry into digital distribution markets.

[78] Sega v. Accolade, 977 F.2d 1510 (9th Cir. 1992). The rule of *Sega* is often put as "[W]here disassembly is the only way to gain access to the ideas and functional elements embodied in a copyrighted computer program and where there is a legitimate reason for seeking such access, disassembly is a fair use of the copyrighted work, as a matter of law." *Id.* at 1527-28. Beyond that bright line rule, *Sega* may well also stand for a judicial willingness to permit copying of small portions of competitor's software in order to promote interoperability.

[79] This has been called "intermediate copying;" e.g., "none of the [plaintiff's] copyrighted material was copied into, or appeared in, [the defendant's final product." Sony Computer Entm't, Inc. v. Connectix Corp., 203 F.3d 596, 600 (9th Cir. 2000).

Accolade contended that the reverse engineering was a fair use of the software because it was the only means of revealing "the unprotected ideas and functional concepts" embodied in the code. The panel's opinion conceded that games developed by Accolade might compete with Sega in some respects, but saw this substitution as swamped by the potential positive effects on the market for Sega's consoles and games:

> By facilitating the entry of a new competitor, the first lawful one that is not a Sega licensee, Accolade's disassembly of Sega's software undoubtedly "affected" the market for Genesis-compatible games in an indirect fashion. . . . [But] video game users typically purchase more than one game. There is no basis for assuming that Accolade's "Ishido" has significantly affected the market for Sega's "Altered Beast," since a consumer might easily purchase both . . . In any event, an attempt to monopolize the market by making it impossible for others to compete runs counter to the statutory purpose of promoting creative expression and cannot constitute a strong equitable basis for resisting the invocation of the fair use doctrine. Thus, we conclude that the fourth statutory factor weighs in Accolade's, not Sega's, favor, notwithstanding the minor economic loss Sega may suffer.[80]

Some commentators have criticized *Sega* for considering the social benefits of reverse engineering in the context of the fourth factor, which is focused on the value of the copyrighted work itself.[81] Calling Accolade's use fair clearly deprives Sega the opportunity to license its software to Accolade. Yet the two are not so easily disentangled. It's easy to imagine Accolade software as complementary, and not simply substituting for, Sega software; a consumer delighted by one good software purchase may develop a taste for others.[82] Moreover, as Apple quickly learned, a company trying to monopolize manufacture of hardware and software for a proprietary operating system may quickly lose market share to a competitor more willing to deal with other firms.[83]

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[80] *Sega*, 977 F.2d at 1523-24.

[81] Since the four fair use factors are noninclusive, courts are permitted to consider overall social benefits of a fair use finding, as well as First Amendment considerations. *See, e.g.*, Glynn S. Lunney, Jr., *Fair Use and Market Failure: Sony Revisited*, 82 B.U. L. REV. 975, 1023-24 (2002).

[82] As James Boyle suggests, even direct piracy may lead to situations that ultimately complement the pirated product. *See* Boyle, *Mean, Cruel, or Lavish*, *supra* note 4, at 2017 (positing that "the losses to Microsoft from the increased ease with which Word [can] be pirated [may be less] than the benefits they get from network effects," since those using the pirated software become increasingly proficient with its interfaces and thereby create a workforce more capable of working with Microsoft products than with those of its competitors).

[83] *See, e.g.*, ADAM BRANDENBERGER & BARRY NALEBUFF, CO-OPETITION (1998) (discussing the new business practices enabled by network connectivity).

The *Sega* rule has guided future decisions and was even reflected in part of the 1998 Digital Millennium Copyright Act (DMCA).[84] However, other portions of the DMCA providing "paracopyright" legal protection to encryption devices used to prevent unauthorized access to copyrighted works may limit the significance of *Sega.*[85] Encryption devices can prevent *all* copying—even that protected under the fair use doctrine—and the DMCA makes trafficking in circumvention devices illegal.[86] Skilled "hackers" can often figure out methods of circumventing digital rights management systems, but the DMCA's anticircumvention provisions make such hacks illegal. It is currently unclear whether circumvention performed in order to permit a "fair use" is illegal. Recently the Second Circuit was very dismissive of claims of a fair use right to use anti-circumvention devices in order to obtain a digital copy of a film:

> [T]he Appellants have provided no support for their premise that fair use of DVD movies is constitutionally required to be made by copying the original work in its original format. . . . We know of no authority for the proposition that fair use, as protected by the Copyright Act, much less the Constitution, guarantees copying by the optimum method or in the identical format of the original.[87]

The court goes on to explain that fair users may just have to make analog copies of movies as presented on television screens, or resort to other "horse and buggy" methods of reproduction.[88]

This approach arguably permits fair use in the case of audiovisual works, but has little applicability to software. Encryption devices can keep proprietary software source code "hidden from view" and inaccessible to reverse engineering. Aware of this dilemma, the Copyright Office began a rulemaking process addressing potential exceptions to the anti-

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[84] See the DMCA's legislative overruling of part of the holding of *MAI Sys. Corp. v. Peak Computer, Inc.*, 991 F.2d 511 (9th Cir. 1993), via The Digital Millenium Copyright Act, 17 U.S.C. § 117(c) (2000) (providing that it is not infringement for the owner of a machine to make a copy of a computer program if the copy is made automatically by virtue of the activation of a machine that contains a licensed copy of the computer program, for repair and maintenance purposes).

[85] 17 U.S.C. § 1201. *See* United States v. Elcom Ltd., 203 F. Supp. 2d 1111, 1140 (N.D. Cal. 2002) (quoting S. Rep. 105-190, at 8) ("Due to the ease with which digital works can be copied and distributed worldwide virtually instantaneously, copyright owners will hesitate to make their works readily available on the Internet without reasonable assurance that they will be protected against massive piracy.").

[86] *See, e.g.*, Jeffrey A. Bloom, *Copy Protection for DVD Video*, PROCEEDINGS OF THE IEEE, July 1999, at 1268. (noting the creation in 1996 of the Content Scrambling System (CSS), the Analog Protection System (APS) and the Copy Generation Management System (CGMS) by the Copy Protection Technical Working Group)

[87] Universal City Studios, Inc. v. Corley, 273 F.3d 429, 459 (2001).

[88] *Id.*

circumvention provisions of the DMCA.[89] Unfortunately, the rulemaking has been going on at a glacial pace, providing for only a very narrow list of exceptions that do not go very far to protect fair use.

Though shrouded in technical detail, these rulemakings, and related court cases on fair use in the context of anticircumvention claims, may play a very important role in promoting fair competition in the digital economy. Many companies are now using software not only functionally, to advance the operation of their products, but as a competitive tool, to deny access to competitors to markets related to their products.[90] Using copyright not to protect the underlying code involved (which is often trivially easy to break), but as a competitive tool to deny interoperability of complementary goods, is a goal far removed from the original intent of the Constitution's copyright clause. It does not deserve the respect that some courts, and the Copyright Office, have often accorded it.[91] A more complete fourth factor analysis, such as that engaged in in *Sega,* would alert courts to the anti-competitive implications of expansive copyright protection here.

C. ARRANGEMENT AND ORGANIZATION CASES

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[89] Copyright Office, *Rulemaking on Exemptions from Prohibition on Circumvention of Technological Measures that Control Access to Copyrighted Works*, http://www.copyright.gov/1201/ (last visited Apr. 11, 2006).

[90] *See Chamberlain Group, Inc. v. Skylink Tech., Inc.*, 381 F.3d 1178 (Fed. Cir. 2004). As one commentator explains, "Chamberlain, a manufacturer of a garage door opener (GDO) sued Skylink, a universal remote control manufacturer, in part, for violation of the DMCA. Chamberlain's GDO system utilized a copyrighted computer program called 'rolling code' that acted as a security measure by changing the signal that the transmitter needs to send to the garage door. Chamberlain's GDO incorporated a rolling code mechanism that created a window of bit streams. When a signal is sent from a transmitter that falls within the window it would allow the opener to activate the motor and open the garage door. If the data sent from the transmitter fell outside of this window, the GDO would ignore it and the garage door will stay shut. However, should the user send two signals within quick succession of one another and the two bit stream sent differ by three, the GDO would enter into a resynchronization module that would reset the window and allow the transmitter to operate the garage door. Skylink's program did not incorporate the rolling program yet nonetheless was capable of controlling the GDO. Skylink's transmitter simulated the rolling code and resynchronization methods by sending signals in rapid succession, two of which differ by three. This caused the GDO to either immediately accept the incoming signal or to enter into the resynchronization mode and allow the transmitter to operate the garage door. Chamberlain claimed that Skylink was liable under the DMCA on the grounds that the GDO contained copyright protected computer programs and that the rolling code acted as a technology measure that operated to control access to the programs." Sandro Ocasio, *Proper Application of Merger Doctrine in Anticircumvention Claims*, 2 SETON HALL CIRCUIT REV. (forthcoming 2006) (manuscript on file with author).

[91] For a good example of judicial skepticism toward these claims, see *Chamberlain Group*, 381 F.3d 1178, which rejects the claim that garage door openers merited the protection of anti-circumvention provisions of the DMCA on grounds that copyright owner failed to

Though some commentators claim that intellectual property's chief purpose is to create *more* information, its *organization* is becoming increasingly important in an era of information overload.[92] Unfortunately, would-be catalogers, archivists, arrangers and guides are often menaced by a thicket of potential copyright claimants who would demand licensing fees merely to be included in the compilation. The courts are divided on the merits of such claims, and the cases often hinge on judges' ability to recognize the ways in which unauthorized arrangement and organization of copyrighted works may be essential to a thriving market in information. Courts have affirmed fair use in the case of internet archives of photos, and a comprehensive collector's guide to a brand of stuffed animals, but have resisted it in the case of an interactive site utilizing movie clips.

In *Kelly v. Arriba Soft,* Arriba's search engine, now located at www.ditto.com, permitted Internet users to find images by searching its archives.[93] Kelly, a nature photographer, sued Arriba Soft for including his images in its archive. Arriba's website provided two services: 1) lists of "thumbnail" visions of the images (reduced in size and thus quality) and 2) framing of the full-size image (which appeared on Arriba's website exactly as it had on its source page).

The Ninth Circuit ruled the first use to be a fair use largely on the basis of its "effect on the market" analysis. The panel recognized that the plaintiff's images "are related to several potential markets," including attracting internet users to Kelly's own website (which sold digital and print versions of the images and other materials), and being sold or licensed to other websites or to a "stock database."[94] Observing that Arriba's thumbnail images actually directed users to Kelly's site, the panel found no evidence that it reduced the value of his images as a type of advertising for his site.[95] The panel also found that the "low resolution" thumbnails in no way competed with the full size images in markets for images.[96] However, since the full-size images Arriba made available did divert internet users from Kelly's website, and effectively substituted for the images Kelly would have sold, the panel was agnostic on the fairness of this use and ordered the district court to consider more closely the economic effects of this type of reproduction.[97]

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show either that the access was unauthorized or that there was a reasonable relationship between the alleged circumvention and any infringement of copyright.

[92] See Frank Pasquale, *The Law and Economics of Information Overload Externalities*, 59 VAND. L. REV. (forthcoming 2006) (manuscript on file with author).

[93] Kelly v. Arriba Soft Corp., 336 F.3d 811 (9th Cir. 2003).

[94] *Id.* at 821.

[95] *Id.*

[96] *Id.* at 821-22.

[97] The panel addressed the diverse markets for the photos involved:

> By giving users access to Kelly's full-sized images on its own website,

The *Kelly* panel's opinion offers a model of complex "fourth factor" analysis that recognizes the complexity of the economic effects of unauthorized use. Richard Posner previously offered doctrinal recognition of this complexity in *Ty, Inc. v. Publications International Limited.* In this case, Ty, the owner of copyrights in various "Beanie Babies" (stuffed animals copyrighted as "sculptural works") sued the publisher of books featuring images of Beanie Babies (including a collector's guide and a "picture book" entitled *For Love of Beanie Babies*). Reversing the district court's summary judgment ruling in favor of Ty, the panel remanded the case for reconsideration of, inter alia, the market effects of PIL's work on both Beanie Babies generally and properly licensed derivative works. Building on his co-authored work *The Economic Structure of Intellectual Property Law*,[98] Judge Posner's opinion both cabined the range of permissible licensing demands and illuminated the positive effects of unauthorized uses on the value of copyrighted works. Most illuminating is the opinion's veritable common law codification of the substitute/complement distinction in fair use law:

> Generalizing from this example in economic terminology that has become orthodox in fair-use case law, we may say that copying that is complementary to the copyrighted work (in the sense that nails are complements of hammers) is fair use, but copying that is a substitute for the copyrighted work (in the sense that nails are substitutes for pegs or screws), or for derivative works from the copyrighted work, is not fair use. If the price of nails fell, the demand for hammers would rise but the demand for pegs would fall. The hammer manufacturer wants there to be an abundant supply of cheap nails, and likewise publishers want their books reviewed and wouldn't want reviews inhibited and degraded by a rule requiring the reviewer to obtain a copyright license from the publisher if he wanted to quote from the book.[99]

> Arriba harms all of the Kelly's markets. Users will no longer have to go to Kelly's website to see the full-sized images, thereby deterring people from visiting his website. In addition, users would be able to download the full-sized images from Arriba's site and then sell or license those images themselves, reducing Kelly's opportunity to well or license his own images.

Kelly v. Arriba Soft Corp., 280 F.3d 934, 948 (9th Cir. 2002), *withdrawn*, Kelly v. Arriba Soft Corp., 336 F.3d 811 (9th Cir. 2003).

[98] WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 121 (The Belknap Press of Harvard University Press 2003).

[99] Ty, Inc. v. Publ'ns Int'l, 292 F.3d 512 (7th Cir. 2002) (citing On Davis v. The Gap, Inc., 246 F.3d 152, 175-76 (2d Cir. 2001)). For more on the substitute/complement distinction, *see, e.g.*, Suntrust Bank v. Houghton Mifflin Co., 268 F.3d 1257, 1277 (11th Cir. 2001) (concurring opinion); Wendy J. Gordon, *Fair Use as Market Failure: A Structural and*

Judge Posner's recognition of the positive economic effects arising from book reviews applies to complementary goods generally. While the *recording* function of the VCR may have made the technology a rival of the *Sony* plaintiffs, the *playback* function made it technology as complementary to audiovisual content as hammers are to nails.

Were the district court correct in unequivocally categorizing PIL's publications as the proper subject of licensing by Ty, the effect on the market analysis would be straightforward. Clearly PIL would be usurping a market that Ty was entitled either to license or develop on its own. However, as Judge Posner recognizes, PIL's various publications deserved separate analysis on this score. The panel judged *For Love of Beanie Babies,* a children's book whose central appeal was amusing arrangements of particular "species" of Beanie Babies into scenes, as "*essentially* just a collection of photographs of Beanie Babies, and photographs of Beanie Babies are derivative works from the copyrighted Beanie Babies themselves."[100]

> At the opposite extreme is PIL's *Beanie Babies Collector's Guide*. This is a small paperback book with small print, clearly oriented toward adult purchasers--indeed, as the title indicates, toward collectors. Each page contains, besides a photograph of a Beanie Baby, the release date, the retired date, the estimated value of the Beanie Baby, and other information relevant to a collector, such as that "Spooky is the only Beanie ever to have carried his designer's name," or that "Prance should be a member of the Beanie line for some time, so don't panic and pay high secondary-market prices for her just because she's fairly new." Some of the text is quite critical, for example accusing Ty of frequent trademark infringements.[101]

The *Ty* court notes that Ty only licensed the right to publish photos of Beanie Babies to authors of collectors' guides who promise not to criticize Ty in their guides

Judge Reinhardt's opinion in *Sega v. Accolade* takes Posner's insight here to a higher level of abstraction.[102] That opinion held that "an

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Economic Analysis of the Betamax Case and Its Predecessors, 82 COLUM. L. REV. 1600, 1643 n. 237 (1982). Though framed as a recognition and reaffirmation of the substitute/complement distinction, Posner's formulation here is in fact an elegant crystallization of caselaw suggesting that the positive effects of an unauthorized use had to "count" in "effect on the market" analysis.

[100] *Ty*, 292 F.3d at 521.

[101] *Id.*, at 519-520.

[102] Sega v. Accolade, 977 F.2d 1510, 1527 (9th Cir. 1993) ("[W]here disassembly is the

attempt to monopolize the market by making it impossible for others to compete runs counter to the statutory purpose of promoting creative expression and cannot constitute a strong equitable basis for resisting the invocation of the fair use doctrine."[103] The panel's opinion conceded that games developed by Accolade might compete with Sega in some respects, but saw this substitution as swamped by the potential positive effects on the market for Sega's consoles and games.

The structure of both *Accolade* and Posner's *Ty, Inc.* opinion are rather similar. Each opinion identifies an ideal "ecology" of intellectual property in the industry in question, and then goes on to explain why a fair use holding in the particular case instantiates a general rule necessary to preserving that pattern of interdependence.[104] In *Ty*, a rule protecting collector's guides is deemed essential to avoid a state of affairs in which all collector's guides need to be licensed by those they rate, and consumers can't trust whether they're getting accurate information about the market or are simply being fed information helpful to the interests of dominant IP owners. In *Accolade*, the court worried that denying permission to copy in order to reverse engineer might leave a single company in control of the market for videogames, when even that company may well benefit from a more vigorously competitive marketplace.[105]

Recognition of positive effects does not always mean that the fair use defendant wins on the fourth factor. The determination may be negative, or neutral. In *Video Pipeline*, a company specializing in the business of movie preview compilation and organization sold clips of movies, without permission from the movie copyright holders, to retailers for use on their websites.[106] Users could not download the clips, but each time a user viewed a clip on a retailer's website, the retailer paid a fee to the movie preview company. The copyright holders of the movies claimed that the use of the clips constituted copyright infringement.

The district court sensitively addressed the "effect on the market" factor accounting for both potential negative[107] as well as positive[108] effects

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only way to gain access to the ideas and functional elements embodied in a copyrighted computer program and where there is a legitimate reason for seeking such access, disassembly is a fair use of the copyrighted work, as a matter of law.").

[103] *Id.*

[104] By ecology here I mean to indicate a delicate balance of interacting forms which can easily be thrown out of balance by the domination of any one particular form. EBAN S. GOODSTEIN, ECONOMICS AND THE ENVIRONMENT 10 (1999).

[105] Sega, 977 F.2d at 1526 ("If disassembly of copyrighted object code is *per se* an unfair use, the owner of the copyright gains a *de facto* monopoly over the functional aspects of his work--aspects that were expressly denied copyright protection by Congress.").

[106] *Video Pipeline, Inc. v. Buena Vista Home Entm't, Inc.*, 192 F. Supp. 2d 321, 342-43 (D.N.J. 2002), aff'd, 342 F.3d 191 (3rd Cir. 2003).

[107] There exists "the possibility that potential customers will be discouraged from purchasing or renting certain videos due to the depiction of the movie as provided by Video Pipeline's clip previews . . . [and,] [m]oreover, the evidence that Video Pipeline's video

resulting from the unauthorized distribution of the clips. Additionally, the court did not find that the movie clips substituted for the copyrighted films or for derivatives of the films.[109] The trial judge recognized that the contested site would increase exposure to the work.[110] Visitors to retailers' websites, "who might otherwise be unaware of, or unattracted to" the films, would have a chance to view clips.[111] These determinations left the district court unconvinced by the plaintiffs' assertions that the Video Pipeline service reduced the value of their copyrighted works.

Unfortunately, the appellate court unfairly restricted the scope of the fourth factor inquiry: "Because the issues pertaining to the potential harm to the market for Disney's derivative trailers are more straightforward we focus our analysis on this area and do not review the District Court's'" consideration of the site's effect on the value of the underlying films. Like the *Texaco* panel, the appellate court found (rather unsurprisingly) that Video Pipeline's unauthorized use of the trailers denied the plaintiffs the right to charge for that content. The appellate panel did not even consider whether potential positive effects on sales or rentals of the underlying movies could swamp the negative effect of a fair use finding on the market for trailers. As Judge Posner's analysis in *Ty* suggests, the existence of reviewing sites uncontrolled by the owners of the material reviewed may be essential to the assurance of trustworthy sources of information about movies or collector's items.

D. THE DUBIOUS LEGAL BASIS OF THE NARROW APPROACH TO FOURTH FACTOR ANALYSIS

As cases like *Video Pipeline* and *Texaco* demonstrate, there is bound to be some judicial resistance to a fourth factor analysis that takes into account *all* the effects of unauthorized use on the value of the copyrighted work at issue. However, that resistance is based not on the copyright law itself, but rather on a misinterpretation of the relevant fair use provisions (namely, 17 U.S.C. § 107(4)'s requirement that the court consider the effect of unauthorized use on "the potential market for or the value of the copyrighted work"). Justice Blackmun most clearly expressed this misinterpretation in his dissent in *Sony v. Universal*:

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previews are low in quality . . . also suggests that the market for purchasing or renting the copyrighted motion pictures may be detrimentally affected." *Id.* at 340. "Video Pipeline's service of providing online previews to retailers' customers may also affect the marketability of the copyrighted motion pictures due the retailers' competition with . . . [the copyright holder] in online sales." *Id.* at 341.

[108] *See id.* at 340-43.

[109] *See id.*

[110] *Id.* at 341.

[111] *Id.*

> The requirement that a putatively infringing use of a copyrighted work, to be "fair," must not impair a "potential" market for the work has [an important implication]. [To prevail, an] infringer must demonstrate that he had not impaired the copyright holder's ability to demand compensation from (or to deny access to) any group who would otherwise be willing to pay to see or hear the copyrighted work.[112]

The dissent facilely equates the statutory requirement to consider the effect of the use on "the potential market for or the value of the copyrighted work" with an examination of the effect of the use on one potential use of the work--namely, that which would have to be licensed if the use at issue were not to be declared fair. If § 107(4) did not effectively define "market" broadly by equating it with the "value of" the copyrighted work,[113] this decision to define "market" as a small subdivision of potential licensees would perhaps be defensible purely as a matter of cabining the meaning of an ambiguous term.

However, such a crabbed interpretation would be illogical in the larger context of fair use analysis. As Lydia Pallas Loren has noted, "The argument that 'lost' permission fees are proof of fourth factor harm has as its premise the legal conclusion at issue: that the use at issue is not a fair use and, therefore, the owner is allowed to charge permission fees for such use."[114] Proof of lost licensing revenue is possible in any contemporary fair use case. It's in the very nature of a "test" or "factor" that it be possible for it to go in either direction; however, Justice Blackmun's interpretation means it can only militate against the defendant.

Unfortunately, a milder version of Blackmun's narrow approach crept into the latest Supreme Court pronouncement on fair use, *Campbell v. Acuff-Rose.* In that case, the plaintiff sued the group 2 Live Crew for appropriating parts of the Roy Orbison song "Pretty Woman" into a

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[112] Sony Corp. of America v. Universal City Studios, Inc., 464 U.S. 417, 484-485 (1984). The language is also careless in suggesting that a negative fourth factor finding can automatically prevent a fair use finding. There are many cases where the disparagement of a work (i.e., in a scathing review) obviously suppresses the market for it (and its derivatives), but is nonetheless fair (because the balance of other factors support the use).

[113] In § 107(4), we are clearly not dealing with the disjunctive "or" (see *HUD v. Rucker*), but with the synonymous "or" denoting the equivalence of the terms "potential market" and "value of." "Or" is often "used to indicate a synonymous or equivalent expression." *Dictionary.com*, *at* http://dictionary.reference.com/search?q=or (last visited Apr. 18, 2006).

[114] Lydia Pallas Lorren, *Redefining the Market Failure*, *supra* note 26; *see also* NIMMER, § 13.05[A][4] (extensively discussing the circularity problem); Gideon Parchomovsky, *Fair Use, Efficiency, and Corrective Justice*, 3 LEGAL THEORY 347, 359 (1997) ("[T]he ability to charge by itself cannot possibly determine legal rights. A hoodlum might have the ability to charge protection fees, and yet no one would argue that this in itself gives him a right to do that.... Absent an underlying theory of rights, the ability to charge is normatively meaningless.").

Rabelaisian mockery of unattractive and unfaithful women.[115] The case is largely remembered for its first factor analysis affirming the importance of parody in fair use jurisprudence. Despite finding 2 Live Crew's rap to be a parody, the Court remanded the case for further consideration by the district court, including a fourth factor inquiry into the degree to which 2 Live Crew's rap reduced the value of the song via displacement (rather than disparagement):[116]

> 2 Live Crew's song comprises not only parody but also rap music, and the derivative market for rap music is a proper focus of enquiry. Evidence of substantial harm to it would weigh against a finding of fair use, because the licensing of derivatives is an important economic incentive to the creation of originals. . . . [Therefore, each side should submit on remand] evidence or affidavits addressing the likely effect of 2 Live Crew's parodic rap song on the market for a nonparody, rap version of 'Oh, Pretty Woman.'[117]

Of course, the Court only deemed the derivative market for rap music "a proper focus of enquiry," not *the* proper focus of enquiry (as the *Sony* dissent would have it). *Campbell* did recognize the validity of 2 Live Crew's submission of evidence that its version of the song did not harm the market for the original song, and might actually increase its notoriety.[118] However, the majority's insistence that "a silent record on [the derivative rap market] disentitled the proponent of the defense, 2 Live Crew, to summary judgment" elevated the importance of derivative markets to an unfortunate extent.[119] As David Nimmer's recent survey of fair use cases has shown,[120] appellate courts have been quick to seize on harm to narrowly

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[115] Sample lyrics include "Bald headed woman girl your hair won't grow/ Bald headed woman you got a teeny weeny afro." *Campbell*, 510 U.S. at 596.

[116] This classic distinction in fair use law is intended to exempt certain negative affects on the market from being considered in the fourth factor inquiry. If a scathing review or cutting parody reduces sales for a work, it has most likely done so by disparaging the work. This kind of market harm is not counted. However, an abridgment of the work or unauthorized copy may usurp sales simply by substituting for the work. *That* market harm is counted in the fourth factor inquiry. *See Campbell*, 510 U.S. at 592 ("Because 'parody may quite legitimately aim at garroting the original, destroying it commercially as well as artistically,' the role of the courts is to distinguish between 'biting criticism [that merely] suppresses demand [and] copyright infringement[, which] usurps it.'").

[117] *Campbell*, 510 U.S. at 593.

[118] *Id.* at 591 n.21.

[119] *Id.* at 590. "Since fair use is an affirmative defense, its proponent would have difficulty carrying the burden of demonstrating fair use without favorable evidence about relevant markets. In moving for summary judgment, 2 Live Crew left themselves at just such a disadvantage when they failed to address the effect on the market for rap derivatives, and confined themselves to uncontroverted submissions that there was no likely effect on the market for the original." *Id.*

[120] David Nimmer, *"Fairest of them All" and other Fairy Tales of Fair Use*, 66 LAW &

construed derivative markets as the key to fourth factor inquiry, and have ignored *Campbell*'s parallel approbation of defense evidence showing positive effects on the market for the work.[121]

E. CRITICAL IP SCHOLARS' RESPONSE: ATTACK ON ECONOMIC ANALYSIS AND RECOURSE TO FIRST AMENDMENT PRINCIPLES

Alarmed by such circularity in leading economic analyses of fair use, a number of critical IP scholars have attempted to downplay the importance of economic analyses in fair use findings. James Boyle's blistering critique of Clinton-era internet policy has illuminated the important First Amendment and expressive values at stake in copyright law that may be insufficiently protected by an individualized, private ownership regime.[122] Eben Moglen argues that IP laws are self-defeating, impeding the very innovation they profess to promote.[123] Nearly all of the scholars contributing to the 2001 Duke Conference on the Public Domain to some extent supported Boyle's plea for ending the "second enclosure movement" of expanding IP protections.[124]

Boyle argues that the new digital economy renders classical economic analysis of intellectual property irrelevant. He emphasizes the fundamental indeterminacy of economic analysis of IP protections:

> Information economics as a discipline does indeed enlarge our

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CONTEMP. PROBS. 263 (2003).

[121] Courts may not be entirely to blame here. Copyright defendants are often strapped for resources and unable to find the kind of economic experts capable of developing "positive effects" evidence. However, even when they do, skeptical trial courts may fault the methodology of the studies or the credentials of the expert. See A & M Records v. Napster, 114 F.Supp.2d 896, 910 ("[T]he report by defendant's expert, Dr. Peter S. Fader, does not provide credible evidence that music file-sharing on Napster stimulates more CD sales than it displaces.").

[122] James Boyle, *The First Amendment and Cyberspace: The Clinton Years*, 63 LAW & CONTEMP. PROBS. 337 (Winter/Spring 2000); James Boyle, *Intellectual Property Online, A Young Person's Guide*, 10 HARV. J. L. & TECH. 47 (1997) (imagining what might have happened in defamation law had there been no *New York Times v. Sullivan,* and lamenting IP law's failure to appreciate the constitutional dimensions of what appear to be merely private disputes over the use of information).

[123] *See* Eben Moglen, *Anarchism Triumphant: Free Software and the Death of Copyright*, FIRST MONDAY: A PEER-REVIEWED JOURNAL OF THE INTERNET, http://emoglen.law.columbia.edu/publications/anarchism.html (last visited Apr. 18, 2006) ("[T]he digital revolution alters two aspects of political economy that have been otherwise invariant throughout human history. All software has zero marginal cost in the world of the Net, while the costs of social coordination have been so far reduced as to permit the rapid formation and dissolution of large-scale and highly diverse social groupings entirely without geographic limitation.").

[124] *See Duke Conference on the Public Domain*, http://www.law.duke.edu/pd/realcast.htm (last visited Apr. 18, 2006).

> understanding of some very important intellectual property questions, but I believe that the answers it offers are, on both empirical and theoretical grounds, much more open than is generally accepted. Indeed, one of its main contributions may be in offering us plot-lines and econo-dramas, ready-made images of types of dysfunction in information markets that sharpen our perceptions of potential risks and benefits. Unfortunately, it tends to offer them in antagonistic and mutually annihilating pairs.[125]

As Boyle notes, orthodox and static economic models may blind courts to restrictive rules' long-term effects on innovation and marginal players.[126]

Focusing instead on the first factor—the "purpose and character of the use"—critical IP scholars have tried to infuse fair use analysis with First Amendment values and a progressive sense of the ultimate policy behind the copyright clause of Article I of the constitution.[127] This new scholarship raises important issues about the constitutional limits of intellectual property protection.[128] However, it should be complemented by a richer,

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[125] Boyle, *supra* note 4, at 2009. Conservative scholars have also questioned the economics behind IP rights; *see, e.g.*, GEORGE PRIEST, WHAT ECONOMISTS CAN TELL LAWYERS ABOUT INTELLECTUAL PROPERTY, 8 RESEARCH IN LAW AND ECONOMICS: THE ECONOMICS OF PATENTS AND COPYRIGHTS 21 (J. Palmer & R. Zerbe, eds.) (1986) (warning that "in the current state of knowledge, economists know almost nothing about the effect on social welfare of the patent system or other systems of intellectual property."); Douglas Clement, *Creation Myths: Does Innovation Require Intellectual Property Rights?*, REASON (March 2003), *available at* http://www.reason.com/0303/fe.dc.creation.shtml.

[126] *Id. But see* Mark Lemley, *Romantic Authorship and the Rhetoric of Property* (Review of Boyle's *Shamans, Software, and Spleens*), 75 TEX. L. REV. 873, 889-91 (1997) (arguing that "it is not at all clear that Boyle's critique of the economic analysis of information is as devastating as he makes it out to be. His primary focus in that critique is on the two different ways in which economics treats information--as a predicate to an efficient market transaction and as a commodity. Boyle views this as a fundamental contradiction which brings down the whole enterprise. It is not. . . . '[P]erfect information' does not have the pride of place in economics that Boyle thinks it does. At least outside of introductory economics classes, economic analysis has done away with the formal assumption of perfect information, and much of the modeling that does occur takes account of uncertainty, 'rational ignorance,' and information disparity.").

[127] James Boyle, *The First Amendment and Cyberspace: The Clinton Years*, 63 LAW & CONTEMP. PROBS. 337, 345 (2000); Samuelson, *Reviving Zacchini: Analyzing First Amendment Defenses in Right of Publicity and Copyright Cases*, 57 TUL. L. REV. 836 (1983); Yochai Benkler, *Free as the Air to Common Use: First Amendment Constraints on Enclosure of the Public Domain*, 74 N.Y.U. L. REV. 354 (1999).

[128] However, in light of the *Eldred v. Reno* decision upholding the Copyright Term Extension Act, it is unclear how effectively courts can circumscribe copyrightholders' rights due to First Amendment principles. Though stating that the fair use defense is a "built-in First Amendment accommodation" of copyright law, the Court was unclear as to whether the doctrine should be expanded in any way in order to reflect First Amendment concerns. *Eldred*, 123 S. Ct. 769, 788 (2003). The majority may be suggesting that fair use doctrine, as it stands, already accommodates First Amendment values to the necessary

more complex account of "effect on the market" analysis. Such an account may not always promote broader access to IP, but as Part III below demonstrates, it will at least allow a more informed discussion of the economic impact of fair use decisions.[129]

III. THE ECONOMIC BASIS FOR COMPREHENSIVE FOURTH FACTOR ANALYSIS

Information goods exhibit two complementary phenomena, often to the extent they are able to be copied. First, most information goods are nonexcludable, barring protective measures. In other words, once one person has access to a physical instantiation of the information good, it's hard to keep that person from sharing it with others via copying.[130] Digital technology has exponentially increased information goods' nonexcludability by making them much easier to copy.[131] Copyrightholders have successfully pushed for stronger copyright protection in response to this situation.[132] On the other hand, digital distribution has generated immense opportunities not only for uncompensated copying, but also for costless distribution, of copyrightholders' work.[133]

Sony legitimized judicial recognition of the long-term positive effects of contested uses. In response to the plaintiffs' worries over lost advertising revenue, the Supreme Court endorsed the district court's conclusion that the studios had other marketing alternatives available. The Court refused to assume that the market for entertainment goods would remain static, and instead focused on the new commercial possibilities enabled by the contested use. This approach is not only faithful to the statutory language in 17 U.S.C. § 107, but is also backed by a great deal of research in information economics. Both economics and business scholars have recognized that widespread use—whether authorized or not—can have tremendous economic benefits for information goods. These benefits fall

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degree.

[129] *Cf. Campbell*, 510 U.S. at 591 n.21 ("Even favorable evidence, without more, is no guarantee of fairness. Judge Leval gives the example of the film producer's appropriation of a composer's previously unknown song that turns the song into a commercial success; the boon to the song does not make the film's simple copying fair."). "Effect on the market" analysis is only one of four factors determining fair use; courts have the discretion to refuse to deem simple copying fair even if it ultimately enhances the value of the copied work.

[130] The first sale doctrine also protects the owner's right to dispose of the work. *See* 17 U.S.C. § 109.

[131] Raymond Shih Ray Ku, *The Creative Destruction of Copyright: Napster and the New Economics of Digital Technology*, 69 U. CHI. L. REV. 263 (2002).

[132] See list of legislation expanding copyrightholders' rights, *supra* n. **Error! Bookmark not defined.**.

[133] *See* Ku, *supra* n. 131, at 267-68 ("[The] nature of digital information . . . makes viral distribution possible at no cost to the content provider.").

into two main categories: network effects and complementarity.

Network effects occur whenever the prevalence of a certain good leads to an increase in the demand for the good. For example, a telephone is worth more to a consumer when 90% of the rest of consumers have a telephone, than when 10% of them do, because there are so many more people to call in the former situation. Network effects enable positive feedback loops in the consumption of both content and the media that carry it:

> Network externalities arise when the utility that a user derives from a product increases with the number of other individuals who also use the product. These externalities have several sources. Direct network externalities exist when the number of users affects the quality of the product itself. Communications products such as telephones and fax machines exhibit this type of effect, as these products become more useful as more individuals obtain them.[134]

Finally, the VCR itself exhibited direct network externalities—the more people who owned it, the greater its value, as the extent and quality of video rental stores and other useful items associated with the item rose. And as VCR penetration soared, the device became increasingly complementary to the films watched on it, as more and more people began to rent films.[135]

Complementarity occurs whenever one good enhances demand for another good.[136] Hammers, for instance, are a complement for nails, and vice versa: the more common either is, the greater the demand for the other. Many of the positive effect cases mentioned above focus on the complementarity of the unauthorized use to certain markets for the copyrighted good in question. For example, the search engine in *Arriba Soft* was a complement to the images it categorized: once users' viewing of thumbnail images on Ditto.com was deemed fair, then Ditto.com's archive (a complementary service) could expand and attract more people to the plaintiff's images (the core product). In *Sega*, Judge Reinhardt accepted the defendant's contention that competition in the market for games (a complementary product) would generate more and better games, which in turn would enhance demand for Sega's console and games (the core

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[134] Dana R. Wagner, *The Keepers of The Gates: Intellectual Property, Antitrust, and the Regulatory Implications of Systems Technology*, 51 HASTINGS L. J. 1073, 1096 (2000).

[135] For an account of this process, see LARDNER, *supra* note 66, at 200-225.

[136] Wagner calls complementarity an "indirect network externality." *See* Wagner, *supra* note 134, at 1097 ("Indirect network externalities exist when the number of users affects the availability of complementary products and services, which in turn affects the value of the core product."). To clarify the two effects here, and to address the full range of complementarities evident in some fair use cases, I have treated direct network effects as the whole of network effects and treat complementarities in general separately.

products).[137]

By focusing on the long-term impact of dynamics like network effects and complementarity, courts can conduct a more comprehensive "effect on the market" analysis. They can also remedy the main shortcomings of the narrow "fourth factor" analysis exemplified in *Video Pipeline, Texaco,* and Justice Blackmun's dissent in *Sony.* As the following discussions of information economics demonstrate, network effects and complementarity are not merely idiosyncratic to the handful of fair use cases where they have been explicitly recognized, but rather are essential to our understanding of information markets.

A. NETWORK EFFECTS

We are conditioned to think of uncompensated copying as an unmitigated loss for the copyrightholder, and many studies of "lost sales" put forward by IP lobby groups (like the Business Software Alliance and the Recording Industry Association of America) assume that any given uncompensated copy is a lost sale at full price. This is obviously untrue given that many of those copying either could not afford or would not be willing to buy the given work. Furthermore, network effects give copyrightholders the opportunity to *indirectly appropriate* the value of their work.[138] For at least twenty years information economists have been documenting this phenomenon. It has played an important role in many industries. Both Microsoft's and Netscape's willingness to give away their internet browser for free evidenced the companys' long-term perspectives: that only one browser could succeed in the market, and that achieving dominance in the long-term was worth short-term sacrifice of sales.

Given the complexity of information economics, any particular use of a copyrighted work is likely to have not only negative, substitution effects on the market for the work, but also positive, complementary effects.[139] For example, unauthorized users of a software program may help the program become an "industry standard," may suggest improvements to the program in user communities, or may eventually purchase a license

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[137] Sega v. Accolade, 977 F.2d 1510 (9th Cir. 1993).

[138] This term likely originates in Stanley J. Liebowitz, *Copying and Indirect Appropriability: Photocopying of Journals*, 93 J. POL. ECON. 945, 950 (1985). *See also* Lisa N. Takeyama, *The Intertemporal Consequences of Unauthorized Reproduction of Intellectual Property*, 40 J.L. & ECON. 511, 512 (1997); *but see* Stan J. Liebowitz, *Economists' Topsy-Turvy View of Piracy*, 2 REV. ECON. RES. ON COPYRIGHT ISSUES 5-17 (2005) (calling for more empirical confirmation of these models of indirect appropriation).

[139] Building on his coauthored work *The Economic Structure of Intellectual Property Law*, Judge Richard Posner advanced the basic microeconomic concept of complementary and substitute goods in copyright law. Ty, Inc. v. Publ'ns Int'l, 292 F.3d 512, 518-19 (7th Cir. 2002); WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 121 (2003).

(once they have the money to buy it—or the money to lose in an infringement action).[140] The *Sony* court presciently (albeit obscurely) grasped the power of such network effects and complementary goods in creative industries.[141] Network effects enable positive feedback loops in the consumption of both content and the media that carry it:

> Network externalities arise when the utility that a user derives from a product increases with the number of other individuals who also use the product. These externalities have several sources. Direct network externalities exist when the number of users affects the quality of the product itself. Communications products such as telephones and fax machines exhibit this type of effect, as these products become more useful as more individuals obtain them. Indirect network externalities exist when the number of users affects the availability of complementary products and services, which in turn affects the value of the core product.[142]

The more uses—authorized or unauthorized—of a product, the more noteworthy, popular, and important the product is likely to become.

Network effects prevail in a variety of industries, including "the telephone, email, Internet, computer hardware, computer software, music players, music titles, video players, video movies, banking services, airline services, legal services, and many more."[143] As Oz Shy explains, all these industries exhibit complementarity, compatibility, standards, consumption externalities, switching costs, significant economies of scale, and lock-in.[144] Expanding on the traditional microeconomic definition of complementarity, Shy explains that "Complementarity means that consumers in these markets are shopping for *systems* (e.g., computers and software, cameras and film,

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[140] OZ SHY, THE ECONOMICS OF NETWORK INDUSTRIES 66 (2001) ("As observed by Connor and Rumelt (1991), piracy has two economic impacts on software firms. First, piracy leads to a fall in direct sales. However, by increasing the size of the installed base, it may also boost the demand for the particular software.") (citing Kathleen Reavis Conner & Richard P. Rumelt, *Software Piracy: An Analysis of Protection Strategies*, 37 MGMT. SCI. 125, 126 (1991)). *See also* Ariel Katz, *A Network Effects Perspective on Software Piracy*, 55 U. TORONTO L.J. 155, 157 (2005).

[141] *See* RICHARD CAVES, CREATIVE INDUSTRIES: CONTRACTS BETWEEN ART AND COMMERCE 2-15 (1998) (discussing the idiosyncratic features of supply and demand for content); HAL VARIAN & CARL SHAPIRO, INFORMATION RULES 12-20 (1999) (discussing supply and demand of information and the tools used for its distribution and storage).

[142] Wagner, *supra* note 134, at 1096. "An activity is said to generate a beneficial or detrimental externality if that activity causes incidental benefits or damages to others, and no corresponding compensation is provided to or paid to those who generate the externality." BAUMOL & BLINDER, ECONOMICS 613 (1991).

[143] SHY, *supra* note 140, at 1.

[144] *Id.*

music players and cassettes) rather than individual products."[145] Whenever this occurs, the increasing prevalence or standardization of any one component of the system can greatly increase the demand for other components of the system.

B. EXPERIENCE GOODS

Industrial economist Richard Caves has investigated the organization of creative activities—"why some creative activities occur in ongoing organizations ('firms'), and others in one-off deals ('the market')."[146] Caves's rich empirical study of various "creative industries" (those in which the product or service "contains a substantial amount of artistic or creative endeavor")[147] is organized around several common themes. On the demand side, the uncertainty of demand leads to the "nobody knows" problem: "There is great uncertainty about how consumers will value a newly produced creative product, short of actually producing the good and placing it before them."[148] Since costs are often sunk,[149] "the risk associated with any creative product is high."[150] All these problems arise in large part because information products are *experience goods,* which need to be experienced in some way before consumers can judge their value.[151]

This uncertainty is often cited as a reason for guaranteeing strong IP rights. Without such rights, IP producers may not be given adequate incentives to produce such goods. However, markets for information have also developed methods of dealing with uncertain demand that depend on robust exceptions and limitations to IP rights. For instance, reviewers are allowed to quote freely from a text in the course of reviewing it. Such "fair uses" are not obviously helpful to the book in question—harsh reviews may drive down sales. However, unlicensed reviews are, in general, an essential tool for generating more information about books and encouraging sales.[152]

Reviews are but one of many ways buyers and sellers overcome the

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[145] *Id.* at 2.
[146] CAVES, *supra* note 141, at 1-2.
[147] *Id.* at vii.
[148] CAVES, *supra* note 141, at 2.
[149] "A sunk cost is a cost to which a firm is precommitted for some limited period, either because the firm has signed a contract to make the payments or because the firm has already paid for some durable item (such as a machine or a factory) and cannot get its mone back except by using that item to produce putput for some period of time." BAUMOL & BLINDER, *supra* note 142, at 493. Less formally, a sunk cost may be considered one that has already been made and cannot be recovered; for example, the performance of an actor in a film, or the copyright for a song that is played during the film.
[150] CAVES, *supra* note 141, at 3.
[151] *Id.*, at 5; *see* also MICROECONOMICS, *supra* note 9.
[152] *Ty,* 292 F.3d at 517 (directly addresses economic benefit of general right to review and quote).

problem of assessing the value of experience goods—those which must be experienced before a buyer can understand its value or appeal.[153] As Hal Varian and Carl Shapiro demonstrate, there are many strategies that makers of an information-good can deploy in order to overcome consumers' unwillingness to buy an experience good they have not experienced.

1. Previewing/Browsing

When consumers can preview and browse works, they are far more likely to purchase them than when the goods are essentially a black box. Several publishers have responded to this phenomenon by making their works available online for browsing. For example:

> The National Academy of Sciences Press found that when they posted the full text of book on the Web, the sales of those books went up by a factor of three. Posting the material on the Web allowed potential customers to preview the material, but anyone who really wanted to *read* the book would download it. MIT Press had a similar experience with monographs and online journals.[154]

Like a phonebook that identifies all the providers of services in a given area, previewing and browsing services give customers some sense of what is available and what they are buying. Major music retailers now brag that one can sample nearly every CD on their shelves.

This model of owner-approved or owner-organized browsing works well when consumers have a clear idea of what they are looking for. Given the exponential expansion of literary, film, music, and software offerings, this is not always the case. In such markets, retailers, "buffs" and others with educated tastes or an interest in selling the work can be crucial to solving collective action problems. Recently, Amazon announced a revolutionary cataloging feature that allows site visitors to search for words and phrases in all the pages of a digitized collection of approximately 100,000 books Amazon offers for sale:

> The copyrights to these titles are spread among countless owners. How was it possible to create a publicly accessible database from material whose ownership is so tangled?

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[153] HAL VARIAN AND CARL SHAPIRO, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY 4 (1999); *cf.* CAVES, *supra* note 141, at 3 (describing the particularly acute "experience good" problem in the context of creative goods: "A creative product is an 'experience good' like these, but the buyer's satisfaction will be a subjective reaction. . . . The organizational problem is to deal with symmetrical ignorance, not asymmetrical information [a problem widely addressed in economic literature].").

[154] Hal. R. Varian, *Markets for Information Goods* (April 1998, revised October 16, 1998), http://www.sims.berkeley.edu/~hal/Papers/japan/index.html.

> Amazon's solution is audacious: The company simply denies it has built an electronic library at all. . . . You can find the page that responds to your query, read it on your screen, and browse a few pages backward and forward. But you cannot download, copy, or read the book from beginning to end. There is no way to link directly to any page of a book. If you want to read an extensive excerpt, you must turn to the physical volume -- which, of course, you can conveniently purchase from Amazon. Users will be asked to give their credit card number before looking at pages in the archive, and they won't be able to view more than a few thousand pages per month, or more than 20 percent of any single book.[155]

Amazon has both the market power and the savvy transactional lawyers to avoid lawsuits over the service. However, other innovators have not been so lucky.[156] Arriba Soft, the creator of an archive of internet images, has been in litigation over its site with one holdout—an obscure landscape photographer—for years.[157] Video Pipeline's archive of brief clips from movies was effectively shut down by a recent district court opinion affirmed by the Third Circuit.[158] The *Arriba Soft* panel took seriously the positive effects of a previewing service on the market for intellectual property previewed in it, while the *Buena Vista* panel effectively ruled that owners of the previewed IP must consent to its (or any part of its) inclusion in any database—extending the logic of Justice Blackmun's fourth factor "analysis" into a per se rule against unauthorized uses with commercial potential.[159]

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[155] Gary Wolf, *The Great Library of Amazon*, WIRED NEWS (Oct. 23, 2003), http://www.wired.com/news/business/0,60948-0.html.

[156] Jeffrey R. Young, *Author's Group Sues Google Over Library-Scanning Project*, 52(6) CHRON. HIGHER ED., at A38 (Sept. 30, 2005) ("'They're making a plainly commercial use' of authors' works without their consent, said Paul Aiken, executive director of the Authors Guild, in an interview. 'The whole purpose of copyright is to allow the authors to share in the commercial value of the works.'").

[157] Search engines' dilemmas on the internet recall classic property law problems arising in the context of "holdouts" in eminent domain disputes. *See* Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L. J. 1, 30 (2004) ("Eminent domain precludes individual landowners from holding out and preventing the government from utilizing land that it needs to effectuate certain public policies.").

[158] *Video Pipeline, Inc. v. Buena Vista Home Entertainment, Inc.*, 342 F.3d 191 (3d Cir. 2003).

[159] Several cases recognize that general exposure to the copyrighted work might cause increased demand for the original. Others explicitly recognize the promotional. Two cases analyzing websites note that a direct reference/link to the location of the original copyrighted work may increase demand for that work. More analytically:

GENERAL POSITIVE MARKET EFFECT	EXAMPLE(S) FOUND IN:
General Exposure to the Copyrighted Work Might Cause Increased Demand for the Original	*Nunez*, *Sundeman*, *Allen*, *Princeton*

2. Reputation and Reviews

Varian also notes that many producers of information products overcome the "experience good" problem by consistently providing an excellent product, thus building a reputation for quality.[160] I've rarely seen an issue of the *New York Times* without at least one interesting article, so I continue buying it; weblogs like politicaltheory.info and aldaily.com have also earned a spot in my "Favorites" directory by consistently pointing me to new ideas or well-written articles. The power of reputation is even stronger in movies and music, where established star performers (as well as writers, producers, and even costumers) can command princely sums for their services. Buyers of computer software are often afraid of purchasing products from unknown companies, and are generally willing to pay a premium in order to buy an established brand.

The law of intellectual property primarily responds to the importance of reputation in "creative industries" by providing strong trademark protection. Trademarks and trade dress can clearly designate the source of products because their owners have a cause of action against anyone who causes confusion of "dilutes" the mark.

However, when we move beyond the field of source designation to the protection of products themselves, adequate institutional signals of reputation may also depend on owners' *inability* to strictly control all uses of their work—particularly with respect to the rights afforded by copyright protection. For example, book reviews would mean little if they could only quote from a book after obtaining permission from the book's copyright owner. I would rarely send articles from the New York Times website to friends if I had to pay a fee each time I sent one. And it is likely that the bloggers who now generate traffic for such sites would not do so if they were not allowed to link to such sites. A restaurant guide unable to reproduce photographs of restaurants would be much less valuable to epicureans who also seek to know something of the ambiance of where they will be dining.

Admittedly, in each of these cases it is difficult to assess the relative contribution of each party to each party's economic success. Perhaps bloggers like freerepublic.com or andrewsullivan.com are ultimately parasites on established publications like the *New York Times*; or perhaps they would command an audience even without such links and quotes and

Direct Reference/Link to the Location of the Original Copyrighted Work	*Kelly*, *Free Republic*
Unauthorized Use Advertises for the Original	*Video Pipeline*, *Antioch*

[160] *Cf.* Richard Lethin, *Reputation, in* ANDY ORAM, PEER-TO-PEER: HARNESSING THE BENEFITS OF A DISRUPTIVE TECHNOLOGY (2001).

the *Times* free-rides off the publicity they provide. It's hard to even imagine a behavioral study that could settle questions like this. However, a relationship of symbiosis or commensalisms is indisputable—both sides benefit from a vital information ecology where journalists, bloggers, reviewers, and established publications can freely quote, cite and link to each to each other's work.

C. CONCLUSION: RECOGNIZING THE PREVALENCE OF COMPLEMENTARITY IN COPYRIGHT'S COMMONS

Regardless of the net social benefit of fair use decisions, there is growing evidence that the copyright-holders' efforts to expand the scope of their control over their work is not only inefficient for the economy as a whole, but also for the *copyright-holders themselves.* Like symbiosis and parasitism in ecology, complementarity and competition pervade every economic system. Courts should not permit overzealous efforts to stamp out unauthorized uses of copyrighted works to blind them to its real benefits.

Many copyright-holders are now trying to leverage public concern "free-riding" pirates and downloaders into judicially or legislatively mandated control over the value of all positive externalities arising from their products.[161] As the story of the VCR demonstrates,[162] this strategy may not only hurt society, but also prove self-defeating for the copyright-holders themselves.[163] There is a broader lesson for fair use law generally.

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[161] *See* Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1039 (2005) (documenting "courts and scholars . . . preoccupied with the problem of "free riding.'"). As Lemley explains, "If the goal of creating property rights is to equate private and social costs and benefits by having the property owner internalize the social costs and benefits, those who 'free ride'—obtain a benefit from someone else's investment—are undermining the goals of the property system." *Id.* at 1039-40. Lemley articulates a number of compelling reasons why law should not strive to internalize all positive externalities of intellectual property to its owner. *Id.* at 1048 ("If I plant beautiful flowers in my front lawn, I don't capture the full benefit of those flowers--passers-by can enjoy them too. But property law doesn't give me a right to track them down and charge them for the privilege, though owners of property once tried unsuccessfully to obtain such a right.").

[162] The VCR ultimately opened up huge new markets for copyright-holders, while only negligibly decreasing sales in some extant markets. *See* S.J. Liebowitz, *The Economics of Betamax: Unauthorized Copying of Advertising Based Television Broadcasts*, http://www.utdallas.edu/~liebowit/intprop/betamax.pdf, at 18 (concluding that the "net impact of VCR's" is ultimately negligible, and therefore "VCR use should be considered an exception to copyright infringement since no diminution of creative activity is likely to follow from VCR use and users would clearly benefit.").

[163] Reviewing struggles between copyright-holders and developers of new technologies, William Fisher observed "It is noteworthy that the story with the happiest ending -- both for the public and for the copyright owners -- was the one in which the owners were denied any share in the revenues earned by the developers of the new technology but instead had

Even where positive effects fail to outweigh negative effects, explicit consideration of them would at least force courts to recognize the ambiguity inherent in the fair use determination and the necessarily speculative character of the enterprise.[164]

IV. VALUATION OF COPYRIGHT'S COMMONS: LESSONS FROM ENVIRONMENTAL ECONOMICS

Despite the compelling economic evidence for the complementarity of various unauthorized uses of copyrighted work, courts are likely to resist considering the full range of these effects in fair use cases. Most judges are not experts on the valuation of intellectual property. However, as *Sony, Kelly,* and *Sega* have demonstrated, courts are capable of a careful analysis of the overall effect of a contested use on the potential market for or value of the copyrighted work.

Therefore, critical IP scholars can hope for judicial accounting of the long-term positive effects of fair uses, so long as they can overcome difficulties in the valuation of such uses, compared with more traditional, market based assessments of the value of intellectual property.[165] Owners of copyrights can often demonstrate immediate substitution effects and revenue losses resulting from a new use of their works. How are courts to balance such costs against more diffuse and longer-term benefits?

Environmental lawyers and economists have long faced similar problems of proof. For example, zoning commissions must often weigh an immediate, profitable conversion of a common resource to private ownership against the longer-term benefits continued open access would offer.[166] An intellectual commons shares many important qualities with the tangible commons up for grabs during such determinations.[167] By and large, any one person's use of a "real-space" commons does not inhibit others' use of it—and indeed may enhance the value of the commons to others.[168] Similarly, I am not preventing anyone from playing a song if I

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to develop a new business model to take advantage of it (VCR's)." William Fisher, *Don't Beat Them, Join Them*, N.Y. TIMES, June 25, 2004, at A. 23.

[164] Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479 (1998).

[165] *See* Wagner, *The Keepers of the Gates*, *supra* note 134, at 1116 n.28, 1080 n.174 (discussing Calabresi and Melamed's treatment of valuation difficulties in their classic work on liability rules, and Epstein's and Merges's subsequent treatment of valuation difficulties as a serious impediment to practical liability rules).

[166] Imagine, for example, a proposal to turn part of Central Park into housing.

[167] Douglas Noonan, *Internet Decentralization, Feedback, and Self-Organization*, *in* JOHN A. BADEN AND DOUGLAS S. NOONAN, MANAGING THE COMMONS 188 (2d ed. 1998); James Boyle, *A Politics of Intellectual Property: Environmentalism for the Net?*, 47 DUKE L.J. 87 (1997).

[168] *Cf.* ROSE, *Comedy of the Commons*, *supra* note **Error! Bookmark not defined.**, at 141-43 (noting how dances and festivals increase in value the more individuals participate, and

happen to copy it, store it, and play it on my personal computer. Indeed, the very fact that I play the song (and, say, recommend it to others) may enhance its value, given the demand that may be created by other fans who now want to hear it.[169]

The parallel between real- and cyber-space commons has not been lost on property scholars. Carol Rose observes that "both cyberspace and environmentalism bring into relief . . . the difficulty we often have in recognizing the value, or even the existence, of the limited commons, the resource management practices that are 'commons' among the insiders but exclusive with respect to outsiders."[170] Rose's article raises some fascinating parallels in the development of cyberspace and environmental law; however, hers is a project more of reflection than of reform, and she does not try to draw explicit lessons from one area of the law for the other[171]

A few scholars have begun to draw lessons from environmental law for IP law. James Boyle argues that critical IP scholars need to learn the following lessons from environmentalists:

> Right now, it seems to me that, in a number of respects, we are at the stage that the American environmental movement was at in the 1950s or 1960s. At that time, there were people - supporters of the

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commenting on how "the publicness of commerce—the increasing returns from greater participation— . . . created the value of any roadway or waterway).

[169] Of course, one must acknowledge the reverse, snob effect: individuals often feel superior when they are part of a tight-knit cognoscenti. *See, e.g.*, THORSTEIN VEBLEN, THE THEORY OF THE LEISURE CLASS 95 (Transaction Publishers 1992; originally published in 1899); DAVID BROOKS, BOBOS IN PARADISE (2001); Henry Leibenstein, *Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand*, 64 Q.J. ECON. 183, 189 (1950).

[170] Carol M. Rose, *The Several Futures of Property: Of Cyberspace and Folk Tales, Emission Trades and Ecosystems*, 83 MINN. L. REV. 129, 181 (1998). Surveying developments in both areas of property law, Rose concludes that "cyberspace and environmentalist critics of property implicitly point our attention to some unexpected costs of property. In particular, they point out that the course of propertization may be partial and uneven and that the distortions from partial propertization may be both destructive of resources and distributionally unfair, producing strife and rancor rather than peace and productiveness." *Id.* at 180.

[171] Scholars intent on reform in this area usually try to use the tools of IP law to advance environmental protection. For example, Michael Gollin argues that granting companies IP rights in innovations they develop in order to comply with anti-pollution will allow "leaders" in this area to gain a competitive advantage via environmental protection. Michael A. Gollin, *Using Intellectual Property To Improve Environmental Protection*, 4 HARV. J. LAW & TECH. 193 (1999). The Rio Convention on Biodiversity grants developing countries IP rights in indigenous species and knowledge, in the hope that protection of these resources will become economically viable once their stewards are better able to capture their value. *See, e.g.*, Sarah A. Laird, *Contracts for Biodiversity Prospecting*, *in* WALTER V. REID ET AL., BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT 99 (1993); Michael A. Gollin, *An Intellectual Property Rights Framework for Biodiversity Prospecting*, *in* REID ET AL., *supra* this note, at 159.

> park system, hunters, birdwatchers and so on - who cared about what we would now identify as "environmental" issues. In the world of intellectual property we now have start-up software engineers, libraries, appropriationist artists, parodists, biographers, biotech researchers, and others. In the 1950s, there were flurries of outrage over particular environmental crises, such as proposals to build dams in national parks. In later years, the public was shocked by burning rivers and oil spills. In the world of intellectual property, we currently worry about Microsoft's allegedly anti-competitive practices, the uncertain ethics of patenting human genes, and the propriety of using copyright to silence critics of the Church of Scientology. We are notably lacking two things, however. The first is a theoretical framework, a set of analytical tools with which issues should be analyzed. The second is a perception of common interest among apparently disparate groups, a common interest which cuts across traditional oppositions.[172]

Boyle argues that two central ideas of environmental law united disparate actors into a coherent movement: "ecology; the study of the fragile, complex and unpredictable interconnections between living systems," and "welfare economics, which revealed the ways in which markets can fail to make economic actors internalize the full costs of their actions."[173] Following on the latter point, I am going to propose in Part V below the use of some specific tools of environmental law—specifically, the economic valuation of biodiversity—to help standardize and systematize "effect on the market" analysis.

Economic analysis became pivotal to advocates of biodiversity in the 1980s. These activists had succeeded in passing laws like the Marine Mammals Protection Act (MMPA) and the Endangered Species Act in the early 1970's, only to see the first pass into near desuetude in the early 1980s and desultory enforcement by the U.S. Fish and Wildlife Service nearly scuttle the second. Though successful in some key legal battles,[174] endangered species advocates were losing regulatory and political conflicts to forces that portrayed the cost of biodiversity protection as outrageously high.[175]

In response to political battles over ESA reauthorization and other

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[172] Boyle, *supra* note 10, at 108.

[173] *Id.* at 108-09.

[174] *TVA v. Hill*, 437 US 153 (1978); *see generally* Lavonne Dye, *The Marine Mammal Protection Act: Maintaining the Commitment to Marine Mammal Conservation,* 43 CASE W. RES. L. REV. 1411 (1993).

[175] CHARLES MANN AND MARK L. PLUMMER, NOAH'S CHOICE: THE FUTURE OF ENDANGERED SPECIES (1995); RICHARD TOBIN, THE EXPENDABLE FUTURE: U.S. POLITICS AND THE PROTECTION OF BIOLOGICAL DIVERSITY 204-05 (1990) (discussing lobbying by the American Mining Congress and the National Forest Products Association in the late 1970s which advanced 1978 Amendments to the ESA which considerably complicated the process of listing particular species).

environmental laws, advocates of biodiversity continued to emphasize the noneconomic value of species protection—including, for example, religious, moral and aesthetic arguments.[176] However, advocates also began to develop more sophisticated economic justifications for preserving species and accompanying habitats. Confronting proponents of "wise use" on their own terms, advocates of preserving the natural commons of species emphasized the hidden value of "nonextractive" resource use (such as tourism and recreation) and "ecosystem services" (such as wetlands' natural capacity to dilute and treat pollution). Although such estimates have been contested vigorously, they do demonstrate that there are costs to the depletion of the natural commons of biodiversity perhaps as great (or greater) than the costs of protecting it.

As I will discuss in the following sections, I think it is time for critical IP scholars to start developing an account of the costs of overprotection of IP (and under-preservation of an IP commons) analogous to the typology of costs and benefits developed by environmental economists in order to reflect the true value of biodiversity and habitat protection. Scholars investigating the valuation of biological diversity have begun to quantify the contributions to human welfare of a vast, diffuse, and unorganized commons increasingly impinged on by claims of ownership and development.[177] Pitched at the proper level of abstraction, this project offers several important lessons for IP scholars.

A. VALUATION IN ENVIRONMENTAL ECONOMICS

The full economic value of biological resources is often not reflected in commodity markets. For example, a tiger may be hunted and sold for meat for, say, $100, but if left alone could have attracted tourists to an area who would have spent many times that for a chance to see it.[178] A

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[176] *See, e.g.*, Bruce Babbitt, *Between the Flood and the Rainbow: Our Covenant to Protect the Whole of Creation*, 2 ANIMAL LAW 1 (1996) (advancing theologically based duties to environmental stewardship); STEVEN WISE, RATTLING THE CAGE: TOWARD LEGAL RIGHTS FOR ANIMALS (2000); BRYAN G. NORTON, WHY PRESERVE NATURAL VARIETY? 5-15 (1987) (surveying anthropocentric, nonanthropocentric, aesthetic, and "transformative" justifications for preserving biodiversity).

[177] *See* J. B. Ruhl, *Toward a Common Law of Ecosystem Services*, 18 ST. THOMAS L. REV. 1, 11 (2005) (commenting on "the emergence of a branch of ecosystem management focused on the economic value humans derive not from natural resource commodities such as timber, or from recreational uses, but from ecosystem functions such as flood control, pollination, thermal regulation, and storm surge mitigation--what ecologists today call ecosystem services.").

[178] *See, e.g.*, S. Navrud and S. Mungatana, *Environmental valuation in developing countries: The recreational value of wildlife viewing,* 11 ECOL. ECON. 135 (1994) (estimating the annual value of ecotourism in Lake Nakuru National Park in Kenya to be between seven and fifteen million U.S. dollars). A good sampling of such scholarship appears at the online syllabus for the course *Environmental Quality and the Economy in the*

rare cone snail may be killed for its decorative shell for a few hundred dollars, but if it and all the rest of its species are used in this way, scientists may never be able to explore whether it contains pain-alleviating chemicals worth millions of dollars to the pharmaceutical industry.[179] New York City recently determined that an undeveloped area of the Catskills could perform "ecosystem services" in water supply and treatment that would cost several times more if supplied artificially.[180]

Although such anecdotes have long been marshaled by advocates of environmental protection, systematic classification of the economic value of biodiversity has only developed in the past two decades. Inspired by a growing social and academic movement for the preservation of biodiversity, several environmental economists and lawyers have tried to quantify the market failures and externalities that fail to reflect the true value of environmental goods and services.[181] Several recent efforts in this regard have systematically identified these values.

Environmental asset valuation has classically been divided into two categories: Use Value (UV) plus Nonuse Value (NUV). Together, UV plus NUV equals Total Economic Value (TEV).[182] As David Pearce and Dominic Moran explain, a use value is "value arising from an actual use made of a given resource[; e.g.,] the use of a forest for timber, or of a wetland for recreation or fishing."[183] This is all very intuitive; however, as Pearce and Moran explain, Use Value itself must be multifaceted if it is to fully reflect not only present and known but also future and unknown uses of a resource:

> Use values are further divided into direct use values (DUV), which refer to actual uses such as fishing, timber extraction, etc.; indirect use values (IUV), which refer to the benefits deriving from ecosystem functions such as a forest's function in protecting the watershed; and option values (OV), which . . . approximate[] an individual's willingness to pay to safeguard an asset for the option of using it at a later date.

Nonuse values include Bequest Value (BV), "the benefit accruing to any

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Mexican Carribean, Washington and Lee University, Spring 2005, http://home.wlu.edu/~caseyj/AppendixA.html.

[179] Callum Roberts, *Letter*, SCIENCE, Oct. 17, 2003 (explaining the potential benefits of endangered cone snails).

[180] Earthbeat, *Putting the Right Price on Nature*, http://www.abc.net.au/rn/science/earth/stories/s365476.htm (last visited Apr. 18, 2006).

[181] *See, e.g.*, Christopher D. Stone, *What To Do About Biodiversity: Property Rights, Public Goods, and the Earth's Biological Riches*, 68 S. CAL. L. REV. 577 (1995) (discussing positive and negative externalities of habitat conservation and destruction).

[182] PEARCE AND MORAN, THE ECONOMIC VALUE OF BIODIVERSITY 19 (1995).

[183] *Id.*

individual from knowledge that others might benefit from a resource in the future," and Existence Value (XV), which derives simply from individuals' awareness that a given aspect of the living environment still exists.

$$TEV = UV + NUV$$
$$TEV = (DUV + IUV + OV) + (XV + BV)$$

Given controversies over nonuse values' translation into political and economic terms, I will not discuss them further in this paper. [184] However, following on this framework, I will briefly discuss economists' efforts to flesh out in more detail each of the three components of Use Value featured in the equation above.

1. Direct Use Value (DUV)

There are three categories of "direct use" of biodiversity: consumptive, productive, and non-consumptive.[185] Consumptive uses transform the physical biomass of life forms into food, fuel, fodder, construction materials, *et al.* for direct use by human beings. Productive uses encompass the "value-added" incorporation of natural materials into more complex goods and services. Non-consumptive uses cover all the "uses" of biodiversity that do not necessarily extract parts of the ecosystem for human use, such as tourism, research, education, and entertainment.

2. Indirect Use Value (IUV)

Undisturbed wetlands provide a great deal of watershed protection, including erosion control, local flood control, and stream flow modulation.[186] Benign ecological processes include nutrient fixing, soil formation, and cycling of water and basic elements like carbon.[187] A now-famous article in *Nature* in 1997 estimated the value of such ecosystem

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[184] *See, e.g.*, D Rosenthal and R. Nelson, *Why Existence Values Should Not be Used in Cost-Benefit Analysis*, 11 J. POL'Y ANALYSIS & MGM'T 116 (1992); National Oceanic and Atmospheric Administration, OIL POLLUTION ACT OF 1990: PROPOSED REGULATIONS FOR NATURAL RESOURCE DAMAGE ASSESSMENTS, U.S. Dep't of Commerce (1994); R. DAVID SIMPSON, THE PRICE OF BIODIVERSITY, ISSUES IN SCIENCE AND TECHNOLOGY 1999; R. David Simpson, Roger A. Sedjo, and John W. Reid, *Valuing Biodiversity for Use in Pharmaceutical Research*, 104 J. POL. ECON. 163 (1985).

[185] K. Ravi and P. Pushpangadan, *Application of Environmental Valuation Technics for Economic Evaluation of Biodiversity: A Critical Investigation*, *in* K. RAVI *ET AL.*, CONSERVATION AND THE ECONOMIC EVALUATION OF BIODIVERSITY 347 (1997).

[186] John MacArthur, *The Economic Valuation of Biodiversity, its Implications and Importance in Bioreseoure Planning, and Initiatives for its Regular Use in Planning Conservation Projects in India*, *in* 2 K. RAVI ET AL., CONSERVATION AND THE ECONOMIC EVALUATION OF BIODIVERSITY 347 (1997).

[187] *Id.*

services at somewhere between $16 to 54 trillion annually.[188] Focusing on local ecosystems, many ecologists have chronicled the costs to many communities of failing to protect cleansing ecosystem processes.[189] While anecdotal evidence of terrible "domino" effects from ecosystem disturbance has long been available,[190] scholars have now begun to quantify the precise costs of neglecting or overdeveloping land and marine resources.[191]

3. Option Value

Although it is by far the most controversial of the "direct use" values mentioned above, option value has been explored by a number of scholars. Successes in bioprospecting in recent years (such as the development of anti-cancer agent Tamoxifen from rare yew trees and important lab tests from horseshoe crab blood) have demonstrated the value of nature's library of genetic material.[192] Less practically (but perhaps more importantly), the preservation of biodiversity has enormous spiritual and moral importance for many environmentalists. Although it is perhaps inappropriate to try to quantify this value, new economic approaches (such as hedonic pricing and contingent valuation) may help economists assess value of these potential or intangible benefits.

B. MEASURING DIRECT AND INDIRECT USE VALUES, AND OPTION VALUES

As the above discussion indicates, virtually any particular feature of the natural environment has several types of current and potential economic value.[193] Given that many of these values redound *socially* (and not simply

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[188] R. Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, 387 NATURE 253 (1997).

[189] James Salzman, Valuing Ecosystem Services, 24 Ecol. L. Q. 887, 888 (1997) (reviwing NATURE'S SERVICES, SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS (Gretchen C. Daily ed., 1997), and commenting that "only recently have ecologists and economists begun systematically examining the contribution of ecosystem services to social welfare.").

[190] *See, e.g.*, E.O. WILSON, THE DIVERSITY OF LIFE 308-9 (1992) (discussing case study of the Nile Perch, and showing how the removal of one species "risk[s] a downward spiral of the larger assemblage").

[191] *See, e.g.*, Sandra Postrel and Stephen Carpenter, *Freshwater Ecosystem Services*, *in* NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS 195 (Gretchen C. Daily ed., 1997).

[192] *See* Christopher Hunter, Comment, *Sustainable Bioprospecting: Using Private Contracts and International Legal Principles and Policies to Conserve Raw Medicinal Materials*, 25 B.C. ENVTL. AFF. L. REV. 129, 164-65 (1997).

[193] *See, e.g.*, Brian Binger et al., *The Use of Contingent Valuation Methodology in Natural Resource Damage Assessments: Legal Fact and Economic Fiction*, 89 NW. U. L. REV. 1029 (1995); Frank B. Croos, *Natural Resource Valuation*, 42 VAND. L. REV. 269 (1989); David A. McKay, *CERCLA's Natural Resource Damage Provisions: A Comprehensive and Innovative Approach to Protecting the Environment*, 45 WASH. & LEE L. REV. 1417 (1988).

to the owner of the environmental good), we should not expect the market price of environmental goods to fully reflect their social benefit. But how do we fully estimate such social benefits in the absence of a functioning market for them? Environmental economists have proposed several potential measures, based on a long history of economic efforts to price the priceless.[194]

As Pearce and Moran explain, there are direct and indirect approaches to valuation. Direct approaches "attempt[] to elicit preferences directly by the use of survey and experimental techniques, such as the contingent valuation and contingent ranking methods."[195] By contrast, "indirect approaches are those techniques which seek to elicit preferences from actual, observed market-based information."[196] Economists also try to triangulate to a reasonable figure by getting several different estimates of the value of a particular resource; for example, in the case of medicinal plants, one might assess "the actual market value of the plants when traded, the market value of the drugs of which they are the source material, and the value of the drugs in terms of their life-saving properties, and using the value of a 'statistical life'."[197] Several approaches to indirect valuation have been developed by environmental economists.[198] "Surrogate market techniques involve looking at markets for private goods and services which

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[194] Jeffrey C. Dobbins, *The Pain and Suffering of Environmental Loss: Using Contingent Valuation to Estimate Nonuse Damages*, 43 DUKE L.J. 879, 898-901 (1994) (discussing individuals' valuations based on use); Don L. Coursey, *The Revealed Demand For a Public Good: Evidence From Endangered and Threatened Species*, 6 N.Y.U. ENVTL. L.J. 411 (1998).

[195] Pearce and Moran give the following account of contingent valuation:

> 1) A hypothetical description (scenario) of the terms under which the good or service is to be offered is presented to the respondent.
> 2) The respondent is asked questions to determine how much he would value a good or service if confronted with the opportunity to obtain it under the specified terms and conditions. These questions take the form of asking how much an individual is willing to pay or willing to accept for some change in provision.
> 3) Response validity is tested by relating "willingness to pay" or "willingness to accept" responses to respondent socioeconomic and demographic characteristics. Confirmation of a priori expectations of the relationship between willingness to pay/accept and income, age, and other variables is a good indicator of meaningful responses.

PEARCE AND MORAN, *supra* note 182, at 60.

[196] *Id.* at 49.

[197] PEARCE AND MORAN, *supra* note 182, at 105.

[198] Maureen L. Cropper & Wallace E. Oates, *Environmental Economics: A Survey*, 30 J. ECON. LIT. 675, 703-710 (discussing the "averting behavior" approach, hedonic market methods ("the notion that the price of a house or job can be decomposed into the prices of the attributes that make up the good, such as air quality"), wage-amenity studies, hedonic labor markets, and hedonic travel costs).

are related to the environmental commodities of concern"—for example, the market for travel in the case of ecotourism.[199] The hedonic pricing method attempts to disaggregate the value of amenities, like air and light, from the price of properties.[200] Although such methods are subject to biases and distortions, sophisticated regression analyses can improve the reliability of the results.

C. THE VALUE OF TAXONOMIZING VALUE

The valuation of environmental resources like biodiversity is a difficult and contestable process. Courts have not uniformly accepted concepts like "option value" and "indirect value."[201] However, the work of Pearce, Moran, and other researchers is highly valuable to scholars of physical and intangible commons. First, these economists help us replace rival anecdotes with systematic analysis of the costs and benefits of different courses of action. By taxonomizing the value of common-pool resources, they bring to light the full range of options foreclosed by biodiversity loss. When copyright litigation threatens the fate of new information ecologies (such as those enabled by P2P networks), a full accounting of the value of the use—and particularly its potential value to the very copyrightholder bringing suit—is in order. Environmental economics suggests some new ways of organizing the inquiry.

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[199] Again, Pearce and Moran provide a straightforward explanation of the method:

> [A] travel cost approach uses observed expenditures on the travel to recreational sites to estimate the benefit arising from recreational experience…many recreation sites charge a zero or negligible price which means that it is not possible to estimate demand in the usual way. However, by looking at how different people respond to differences in money travel cost (including transport, admission, an the value of time, etc) we can infer how they might respond to changes in entry price.

PEARCE AND MORAN, *supra* note 182, at 67.

[200] In the hedonic pricing method, "an attempt is made to estimate an implicit price for environmental attributes by looking at real markets in which these characteristics are effectively traded. Thus, 'clean air' and 'peace and quiet' are effectively traded in the property market since purchasers of houses and land do consider these environmental dimensions as characteristics of property." PEARCE AND MORAN, *supra* note 182, at 67.

[201] Biodiversity valuation was recently at issue in two appellate opinions rejecting commerce clause challenges to intrastate regulation of endangered species. GDF Realty Investments, Ltd. v. Norton, 326 F.3d 622, 638 (2003) ("[T]he *possibility* of future substantial effects of the Cave Species on interstate commerce, through industries such as medicine, is simply too hypothetical and attenuated from the regulation in question to pass constitutional muster."); Rancho Viejo v. Norton, 323 F.3d 1062, 1073 (D.C. Cir. 2003) ("the commercial value of preserving species diversity played an important role in Congress' deliberations").

V. TOWARD MORE RIGOROUS EFFECT ON THE MARKET ANALYSIS

A. MATCHING THE NEEDS OF EFFECT ON THE MARKET ANALYSIS WITH THE ACHIEVEMENTS OF BIODIVERSITY VALUATION

Imagine each of the following situations:

- Enticed by content of the *Los Angeles Times* reprinted online, I decide to buy the print version of the Sunday paper.[202]
- Budget-pressed directors of job training programs pirate copies of Microsoft Word in order to train their students how to use the software. As labor capable of operating the software becomes more plentiful, more companies begin to use Microsoft Word.[203]
- A college student who has downloaded hundreds of MP3 files from the internet decides to buy an Apple I-Pod to make them portable. Determined to fill up the machine to its 15,000 song capacity, the student later buys dozens of CD's once she has a job.

Each scenario illuminates the complex, socially conditioned economy (and ecology) of ideas. Each suggests that uses copyrightholders want to proscribe can ultimately redound to their benefit. Yet how is a court supposed to take such uses into account?

As demonstrated previously, judicial fair use analyses have too often ignored the long-term positive effects of new technologies on copyrightholders, as well as the complementary products and network effects generated by such technologies. The chart below suggests that scholars of biodiversity valuation have confronted similar problems in their own field:

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[202] *Cf. L.A. Times v. Free Republic*, 54 U.S.P.Q.2d 1453 (C.D. Cal. 2000) (stating that online market for plaintiff newspapers' articles was harmed because plaintiffs demonstrated that "[defendants] are attempting to exploit the market for viewing their articles online").

[203] As James Boyle suggests, network effects can be immensely profitable for a firm, but raise some important policy concerns:

> Are the losses to Microsoft from the increased ease with which Word could be pirated, greater or lesser than the benefits they get from network effects? We do not know the answer. What will be the effects on innovation of this increase in the importance of network effects? Does it argue for greater intellectual property protection or, to the contrary, a removal of protection from any protocol around which standardization could occur? Again, the issue is an extraordinarily complex one.

Boyle, *Mean, Cruel, or Lavish*, *supra* note 4, at 2017.

	Shortcoming of "Effect on the Market Analysis" in Fair Use	**Complementary Achievement of Scholarship in Biodiversity Valuation**
Time Horizon	Too often undervalues long-term Pareto-optimal impact of disruptive technologies.	Sets "option" and "bequest" values on biodiversity as raw material for future exploitation.
Complementary Products	Unwilling to systematically explore benefits to content owners of products which complement their work.	Inquires into the value of wilderness complementing adjoining, developed land.
Network Effects	Ignores how a network of fair uses may make parallel paid uses more likely.	Accounts for the value of ecosystem services supporting productive economic activity; details "domino" effects of eliminating a common biodiversity resource; Explores the full range of interconnections of ecosystems.

In the section below, I attempt to demonstrate how such comprehensive analysis of long-term, complementary and network "effects on the market" could enhance the rigor of upcoming judicial decisions on fair use defenses in cases involving P2P technologies.

B. LONGER TIME HORIZONS

By emphasizing the "option value" of biodiversity, environmental economists have helped concretize the hidden worth of commons resources—a worth that may only emerge with the aid of more intense bioprospecting or better search technologies. The value of communication and information technology is also contingent on a wide array of societal developments. As Shapiro and Varian demonstrate, most new information industries face a long development time, when only a few people use the technology, and then suddenly grow exponentially when a critical mass of

users is reached and network effects kick in.[204] Email was developed in the 1970s, but only took off in the 1990s as more and more people joined the network. Napster and similar P2P technologies may well have jump-started the development of network effects in digital music distribution. Just as a grace period from licensing fees aided the infant industry of radio in the early twentieth century,[205] unsettled copyright laws permitted this new technology to convince millions to spend time on the web finding and listening to music. If P2P succeeds in building new communities of interest in music, such communities may whet consumer appetites for paid uses of copyrighted content.[206]

It is also important not to assume that the most prevalent initial use of a new technology will forever be its dominant use. Though primarily of interest to consumers now, P2P software has many potential business applications. Major players in the computer industry have begun to explore its potential:

> Sun Microsystems [has] created an infrastructure called Project JXTA, which allows programmers to use a common library when creating new P2P applications. By providing a robust, secure, interoperable applications programming interface (API), Project JXTA hopes to attract new audiences to P2P technologies, including businesses. As most of the groundwork is completed, it would take far fewer resources for a business interested in P2P to get started using Project JXTA than starting from scratch.[207]

The latter point—on the "snowball" effect of developing applications—suggests the importance of network effects in software development.

C. NETWORK EFFECTS: A READYMADE DISTRIBUTION NETWORK

Many P2P services permit the self-organization of groups devoted to sampling and evaluating music. P2P promises to generate peer-based exchange systems, which can generate an interactive listening community.

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[204] CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES (1999), *available at* http://www.inforules.com/.

[205] See Lessig's treatment of radio in LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE (1999); for a treatment more sympathetic to copyrightholders, see PAUL GOLDSTEIN, COPYRIGHT'S HIGHWAY: FROM GUTENBERG TO THE CELESTIAL JUKEBOX (1995).

[206] Compare, for example, the role of free Lexis/Westlaw access in law school in generating lawyers' taste for (dependence on?) these services; or the role of "used books" in potentially developing appetites for new ones. *See* Rob Walker, *Paperback Music*, N.Y. TIMES, Apr. 1, 2001, (Magazine) at 17 (proposing a two-tiered approach in which the CD would co-exist along with lower quality downloads).

[207] Matthew Gibbs, Hill Associates, *Peer to Peer: Past, Present, Future* (2003), http://www.hill.com/archive/pub/papers/papers.asp?yr=2003&mn=03.

This practice reflects the communal innovation that led to the development of the Internet itself. In keeping with the nature of the Internet, P2P services generate taste through interactivity. Other users act as filters and bellwethers, potentially catalyzing mutual tastes. With the exponential increase in the production of information, services of customization, personalization, mediation, filtering, and screening are going to become increasingly important. At the same time, the underlying interaction between users is an integral part of the network and the P2P protocol's efficiency - individuals sharing with one another in a connected environment benefit from the positive externalities of "network effects." Content-owners will have many new ways of marketing and distributing their works in such an atmosphere.

They might also find that more widespread fair use can lead to a "bigger pie" of innovation and creation for all concerned. The West Coast's decided advantage over Boston area businesses in internet innovation is in part explained by the greater prevalence of informal sharing in Silicon Valley. A leading scholar

> attributes much of the Silicon Valley's success to a culture that promotes informal sharing of technical know-how, amidst intense competition, among the many small firms that populate the area. In contrast, the staid, larger, and more vertically integrated, firms located in the Route 128 region near Boston prefer traditional self-reliance and secrecy. . . [T]his difference between the two regions . . . is a major reason for Silicon Valley's phenomenal growth and Route 128's relative stagnancy.[208]

In general, high-volume/low-margin business models that focus on maximizing paid uses (as opposed to low-volume/high-margin models that focus on minimizing unpaid uses) may prove most beneficial to both consumers and producers.

D. COMPLEMENTARY USES: ADVERTISING AND EXPOSURE

Nearly all intellectual property is both raw material and finished product (such that increasing its price does not simply increase incentives for creating finished goods, but also increases the cost of future finished goods).[209] This dual nature of such goods is even more evident in the case

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[208] Marina Lao, *Unilateral Refusals to Sell or License Intellectual Property and the Antitrust Duty to Deal*, 9 CORNELL J.L. & PUB. POL'Y 193, 216 (1999) (describing the conclusions of ANNALEE SAXENIAN, REGIONAL ADVANTAGE: CULTURE AND COMPETITION IN SILICON VALLEY AND ROUTE (1996)).

[209] JAMES BOYLE, SHAMANS, SOFTWARE, AND SPLEENS: LAW AND THE CONSTRUCTION OF

of music. Experiences of listening to music are not only integral to its creation (production), but also to its enjoyment (consumption). As Aristotle noted centuries ago, we are creatures of habit. Whenever we listen to music, we further etch this activity into the groove of habit.[210] So Napster does not simply steal sales from RIAA members—it exposes potential customers to their products, cultivating tastes as surely as advertising or radio air play.

What is the economic upshot of this holistic view of the P2P phenomenon? Think again of the radio and advertising analogy. Owners of recordings pay for advertising, and are paid for digital webcasts. Napster falls between the two. Web-based radio station owners pay collective rights organizations for licensing because their own gains from advertising are attributable to the content, and in order to compensate content owners for possible piracy.[211] An MP3 obtained via Napster is more likely to substitute for a legitimately purchased CD than a radio performance, since it's of higher quality and far easier to find. But Napster and similar file sharing services have also done the recording industry an invaluable service—they have acclimated millions of individuals to the idea of searching for and enjoying music on the web, and have catalyzed a new responsiveness to consumer demands that may ultimately prove very profitable to the industry. This potential market, largely opened by Napster, certainly promises to expand their business more than any advertising campaign could.[212] By complementing traditional market-based proprietary distribution and control, P2P's promise stems from its ability reduce the cost of drawing information out of and inputting information back into the

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THE INFORMATION SOCIETY 42 (1996).

[210] G.A. COHEN, IF YOU'RE AN EGALITARIAN, HOW COME YOU'RE SO RICH? (2000) (critiquing Rawls' identification of the "basic structure" as the subject of a theory of justice due to its failure to account for the importance of ingrained habits and dispositions); PETER BERKOWITZ, VIRTUE AND THE MAKING OF MODERN LIBERALISM (1999) (discussing Aristotle on habit); *but see* JON ELSTER, POLITICAL PSYCHOLOGY 180-91 (1993) (on spillover, compensation, and crowding-out effects).

[211] "Brick and mortar" radio stations only pay royalties to composers, lyricists, and their publishers; however, internet "streaming" radio stations pay these royalties and royalties to performers and their recording companies under the Digital Performance Rights in Sound Recordings Act ("DPRA") of 1995, Pub. L. No. 104-39, § 1, 109 Stat. 336 (1995). Details on the digital royalty payment process are available at SoundExchange. *SoundExchange, About Us*, http://www.soundexchange.com/about/about.html (last visited Apr. 18, 2006).

[212] I would cite some excellent work by McKinsey, Jupiter, and Forrester consultancies here, but it's nearly all proprietary. *See, e.g.*, McKinsey's study "Unchained Melody," available (for a price) at http://www.mckinseyquarterly.com/article_abstract.asp?ar=978&L2=17&L3=66&srid=86&gp=0 (claiming that "[a] new model of music distribution—a subscription-based "jukebox in the sky" that delivers an unlimited choice of music—could double the size of the industry, to $80 billion a year, potentially giving incumbents a piece of a much larger pie."). As limited access to this material suggests, intellectual property protections themselves can sometimes hinder efforts to ascertain their proper scope.

network.

Of course, the sum total of these network, complementarity, and long-term effects may not outweigh the negative, substitution effects enabled by Napster's service. However, incorporating systematic inquiry into the positive effects of new technologies on content owners would enable courts to more fairly assess their effect on the market for copyrighted works. Just as environmental economists have focused our attention on the quantifiable value of the tangible commons of biodiversity, "fair use" defenses need to start incorporating systematic accounts of the potential value of new technologies to copyrightholders.[213] If courts start taking such effect on the market analysis more seriously, they will not only evaluate new uses' effect on the value of copyrighted works more accurately, but also may shift P2P networks away from the socially deleterious (but legally effective) strategy of avoiding liability by refusing to monitor or service their networks.[214]

VI. CONCLUSION: A PLEA FOR TAXONOMY

The legal rules governing copyrights may not seem terribly significant to the casual observer. Who cares if consumers or producers of entertainment products get a slightly greater or lesser share of the new profits generated by digitized distribution? Yet as more and more vital information is distributed digitally, these rules will increasingly affect our culture and politics. Furthermore, as "smart appliances" and other manufactured equipment incorporates more and more copyrighted software, the rules governing fair use will crucially shape the economy.

Consider the story of Ed Swartz, whose company Static Control recycles printer cartridges. Lexmark, a leading manufacturer of the cartridges, sued Static Control for copying 56 bytes (a trivial amount) of the code in computer chips in Lexmark cartridges that enables communication between the cartridge and the printer.[215] An adverse ruling would essentially put Static Control out of business, with potentially baleful effects on competition generally:

> Should his company lose in court, Swartz envisions a world of monopolies that would make turn-of-the-century Standard Oil

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[213] *See* RISHAB AIYER GHOSH, CODE (forthcoming, 2006) (arguing that "'open source' creative collaboration provides an alternative to commercially-driven policies determining intellectual property rights," and suggesting ways of valuing "free" software in terms of the avoidance of licensing fees for proprietary alternatives.).

[214] *See, e.g.*, Fred von Lohmann, *What Peer-to-Peer Developers Need to Know about Copyright Law* (Jan. 2006), http://www.eff.org/IP/P2P/p2p_copyright_wp.php ("Accordingly, in order to avoid vicarious liability, a P2P developer would be wise to choose an architecture that makes control over end-user activities impossible.").

[215] Frank Ahrens, *Caught by the Act: Digital Copyright Law Ensnaring Businesses, Individuals over Fair Use*, WASH. POST, Nov. 12, 2003, at E1.

> blush. He predicts deals between automakers and tiremakers, for instance, that would put copyright-protected chips in tires to prevent a car from starting unless it was fitted with automaker-approved tires. Imagine, for instance, if Toyotas would run only on Goodyear tires, he said. What would become of Michelin, Cooper, Pirelli and other tiremakers?[216]

As IP owners increasingly use their rights to leverage market power over one product into dominance in the market for complementary goods, fair use determinations may be crucial to the preservation of competition. Copyright policymakers—in both Congress and the Copyright Office—should become more sensitive to the role of fair use in the creation of (and competition in) new markets.

Yet even if they don't, courts can still take into account the economically beneficial effects of fair use by factoring them into the "effect on the market" analysis. Admittedly, any judge's determination that a litigated use actually has a positive effect on the market for a copyrighted product[217] will amount to a judicial determination that the IPR-holder does not know what is good for him.[218] Such a paternalistic determination would be suspect, but for the long history of content-owners trying to stifle innovations that ultimately proved nearly Pareto-optimal—good for all major stakeholders concerned.[219] Even Motion Picture Association of America President Jack Valenti—who once deemed the VCR the technological equivalent of the "Boston Strangler"[220]—would have to agree that its impact on the entertainment industry was ultimately benign.[221]

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[216] *Id.* Of course, it is unlikely that most consumers would buy such a car. But oligopolistic industries may reach a consensus on such standards that essentially eliminates consumer choice in the matter. Had it continued, the Secure Digital Music Initiative could have pioneered such methods of coordination. See Nichelle Levy, *Method to Their Madness: The Secure Digital Music Initiative, A Law and Economics Perspective*, 5 VA. J.L. & TECH. 12 (2000).

[217] Or, so swamps negative effects as to make the fourth factor a "wash."

[218] Or, more likely, *it*, given the virtual inevitability of corporate control of most litigated intellectual property rights in our economy.

[219] Copyrightholders have attempted to stop or control the spread of hardware ranging from piano rolls to broadcast radio to the VCR. *See* Jane Ginsburg, *Copyright and Control over New Technologies of Dissemination*, 101 COLUM. L. REV. 1613, 1642-45 (2001).

[220] In 1981, commenting on the VCR, Valenti claimed that "the VCR is to the American film producer and the American public as the Boston strangler is to the woman home alone," and predicted that "We are going to bleed and bleed and hemorrhage, unless this Congress at least protects one industry . . . whose total future depends on its protection from the savagery and the ravages of this machine." *Home Recordings of Copyrighted Works: Hearings Before the Subcomm. On Courts, Civil Liberties, and the Administration of Justice of the House Comm. On the Judiciary*, 97th Cong. (1982) (statement of Jack Valenti, President, Motion Picture Ass'n of Am.), *available at* http://cryptome.org/hrcw-hear.htm (last visited Apr. 18, 2006).

[221] Richard Caves characterizes this potential for error as the classic "nobody knows" problem of "creative industries": customers can't be sure they'll enjoy the product, and

Copyright's fair use doctrine could be an effective method of protecting such Pareto-optimal new technologies, particularly since its fourth factor—effect on the market analysis—calls for judicial inquiry into the *potential* effects of uses enabled by new technology. In cases addressing technologies ranging from the photocopier to internet search engines, courts have only occasionally addressed the contested use's potentially *positive* effect on the market for the copyrighted work. This paper proposes to systematize this inquiry in the copyright field by identifying three categories of potentially positive effects of fair use: 1) network dynamics, 2) complementary goods and services, and 3) long-term enhancement of marketing opportunities. These three categories of economic effects parallel three facets of the value of biodiversity: 1) indirect use values like ecosystem services (which enable other productive economic activity), 2) direct use values (which complement other forms of economic activity), and 3) option values (which focus on the long-term value of biodiversity).

Of course, it is never wise to analogize too directly between the law (and valuation) of real and intellectual property. The comparisons proposed here are cautious and tentative. But it is undeniable that a) "effect on the market" analysis in copyright law currently does not systematically address the positive effects of new uses, b) "effect on the market analysis" is part of a fair use inquiry ultimately designed to assess the worth of an intellectual commons, and c) economic studies focused on tangible commons have refined and developed categories of value that anticipate and promise to concretize neglected values of an informational commons. Even those skeptical of the parallels between informational and tangible commons resources can appreciate the need for courts to systematically inquire into the potentially positive effects of new technologies in "effect on the market" analysis.

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producers can't be sure of customer demand. RICHARD CAVES, CREATIVE INDUSTRIES: CONTRACTS BETWEEN ART AND COMMERCE 175 (2000).